ORDER NO. VRD-7611-259

Service Manual

Editing Video Cartridge Recorder

NV-5130A -E -A -B -EF

SPECIFICATIONS

Power Source:		AC 200 V/220 V/240 V, 50 Hz
Power Consumption:		Approx. 120 watts
Television System:		PAL/CCIR TV standard SECAM/CCIR TV standard (NV-5130A-EF only)
Video Recording System:		2 rotary heads, frequency modulation
Tape Speed:		163.22 mm/s
Tape Width:		12.7 mm (1/2")
Heads:	Video:	2 rotary heads
	Audio/control:	1 stationary head
	Erase:	1 rotary head for video dubbing 1 stationary head for audio dubbing 1 stationary full track head
Recording Time:		Max. 36 min. with NV-P530H
Input Level:	Video:	TV (8P connector) 1.0 Vp-p 75Ω Camera-1 (UHF-type) 1.0 Vp-p 75Ω Camera-2 (UHF-type) 1.0 Vp-p 75Ω
	Audio:	TV (8P connector) min. −25 dB 220 KΩ MIC min. −72 dB 600Ω~20 KΩ AUX IN min. −25 dB 220 KΩ
Output Level:	Video:	TV (8P connector) 1.0 Vp-p 75Ω Video out (UHF-type) 1.0 Vp-p 75Ω
	Audio:	TV (8P connector) 1.0 Vrms 300Ω or less Line out 1.0 Vrms 300Ω or less
Horizontal Resolution:	B/W:	More than 340 lines
	Colour:	More than 260 lines
Frequency Response:	Audio:	50~12,000 Hz ±3 dB
Signal-to-Noise Ratio:	Video:	More than 43 dB
	Audio:	More than 42 dB
Operating Temperature:		+5°C~+40°C (41°F~104°F)
Operating Humidity:		35%~80%
Dimensions:		531 mm(W)×415 mm(D)×218 mm(H)
Weight:		Approx. 26 kg
Standard Accessory:		VTR-monitor connection cable····· 1

National

Matsushita Electric Trading Co., Ltd.
P.O. Box 288, Central Osaka Japan

INTRODUCTION

National capstan servo electronic editing colour video cartridge tape recorder Model NV-5130A conforms to EIAJ/CCIR B/W and PAL or SECAM colour standards.
The head durm/capstan servo systems and the precision inscribed tape path on the head drum assure perfect interchangeability between the any EIAJ/CCIR standard VTR/VCR.
National NV-5130A has many features; entire electronic editing (Insert & Assembly editing) with flying erase head (Field-by-field erase), still framing, dubbing switch, drop-out noise compensator, automatic phase control (APC), automatic frequency control (AFC) and three inputs switchable (Camera 1, Camera 2 and TV).
And then, National NV-5000A series video cartridge tape recorder (including NV-5130A) can be used the 60 min. video cartridge tape (NV-P560H).
The up-to-date electronic engineering and mechanism design and the plug-in printed circuit board are employed in the NV-5130A for best reliability, durability, easy operation and quick and easy servicing.
This service manual offers the informations including circuit explanation, adjustment procedure, replacement parts list, exploded view and circuit diagram for engineering service, repairing and replacement parts order of NV-5130A.

FEATURES

1. PAL/CCIR, SECAM/CCIR (NV-5130A-EF only) TV standard 1/2" video cartridge recorder. Tapes recorded on NV-5130A are fully compatible with other 1/2" herical scan VTRs of the same standard.
2. Fully electronic capstan servo editing with the flying erase head for insert and assembly editing of video information. The NV-5130A editing system produces clear, sharp edits without tear, roll or other disturbances that would normally degrade the picture.
3. Field-by-field insert editing. When Editing button is pressed, the insert begins only at the beginning of the next field (Blanking Interval Editing). When Editing button is pressed again, the insert is ended after the field end, for sharp edits without tear or roll.
4. Video only editing is made possible by the flying erase head. This allows you to edit the picture without changing the sound.
5. Remote control unit connection possible (Rec., Play, FF, Rew., Stop).
6. Automatic operation is possible (Play, Search, Rew., Eject).
7. Three inputs switchable. For added flexibility, the NV-5130A has two UHF-type connectors and one VTR monitor connector for Camera 1, Camera 2, or TV inputs.
8. HPF™ video heads provide high S/N ratio, high quality pictures. They also afford extra long head life.
9. Dropout noise compensator virtually eliminates dropouts, to assure stable colour and B/W pictures free from annoying degradations.
10. Still framing. Still framing enables you to analyze portions of any videotaped program in detail.
11. Skew and tracking controls can be adjusted during playback. A tracking level meter helps you to determine the optimum adjustment.
12. Precision inscribed tape path on head drum insures 100% interchangeability with all National 1/2" VCRs.
13. Ease of servicing. NV-5130A uses modular construction with plug-in printed circuit boards to simplify maintenance.
14. Video level meter indicates input signal level even in Play or Stop mode so the input video level can be set for edit purposes.
15. Dubbing switch. This switch assures the better picture quality of the dubbed tape.

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CONTROLS AND THEIR FUNCTIONS

Front Panel

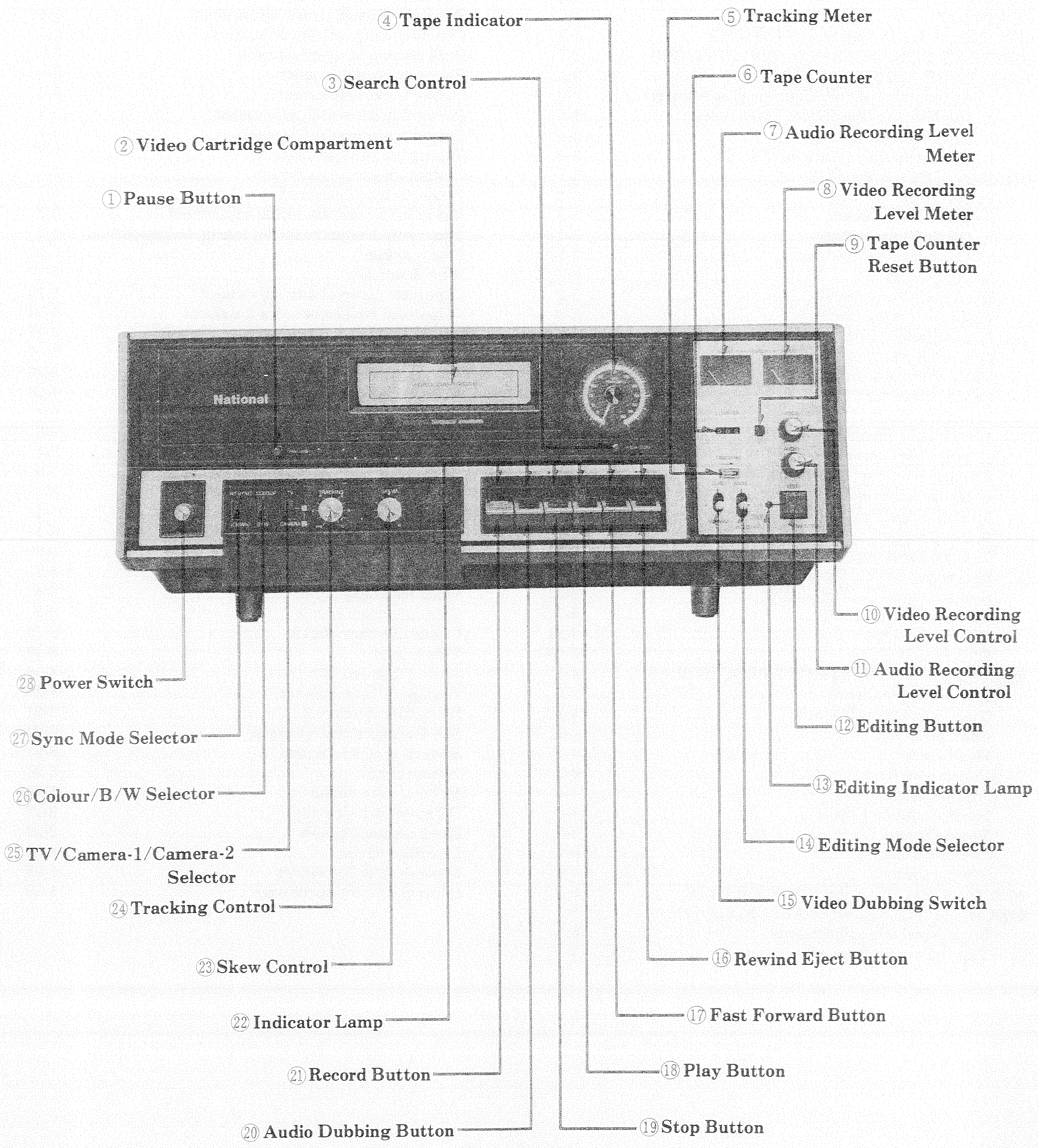

④ Tape Indicator
⑤ Tracking Meter
③ Search Control
⑥ Tape Counter
② Video Cartridge Compartment
⑦ Audio Recording Level Meter
① Pause Button
⑧ Video Recording Level Meter
⑨ Tape Counter Reset Button
National
⑩ Video Recording Level Control
㉘ Power Switch
⑪ Audio Recording Level Control
⑫ Editing Button
㉗ Sync Mode Selector
⑬ Editing Indicator Lamp
㉖ Colour/B/W Selector
⑭ Editing Mode Selector
㉕ TV/Camera-1/Camera-2 Selector
⑮ Video Dubbing Switch
㉔ Tracking Control
⑯ Rewind Eject Button
㉓ Skew Control
⑰ Fast Forward Button
㉒ Indicator Lamp
⑱ Play Button
㉑ Record Button
⑲ Stop Button
⑳ Audio Dubbing Button

Fig. 1

(Front)

① **PAUSE BUTTON**

Press this button to view a still image.

- * A still image can be seen only while this button is pressed during the playback.
- * When the pause button is pressed, a still image will appear but exhibit "noise" lines near the top, middle or bottom and, in some cases, the image may flutter vertically. If so, release the button and press again, a few times if necessary.

② **VIDEO CARTRIDGE COMPARTMENT**

For insertion of a video cartridge for playback or recording.

③ **SEARCH CONTROL**

(See ④ below).

④ **TAPE INDICATOR**

The search control is used to preset the tape indicator to playback the desired portion of the tape.

⑤ **TRACKING METER**

Indicates the tracking condition.

⑥ **TAPE COUNTER**

⑦ **AUDIO RECORDING LEVEL METER**

Indicates the audio recording level.

⑧ **VIDEO RECORDING LEVEL METER**

Indicates the recording level and also indicates the video input level in all modes as long as video input signal is connected.

⑨ **TAPE COUNTER RESET BUTTON**

⑩ **VIDEO RECORDING LEVEL CONTROL**

Turn this control to adjust the video recording level while visually referring to the Level Meter ⑧.

⑪ **AUDIO RECORDING LEVEL CONTROL**

Controls the audio recording level. Should be adjusted so that the Recording Level Meter ⑦ needle is exactly at the 0VU position.

⑫ **EDITING BUTTON**

To edit the prerecorded program simply press this button while playing back the tape. The prerecorded program, if any, will automatically be erased and replaced by the new recording.

⑬ **EDITING INDICATOR LAMP**

⑭ **EDITING MODE SELECTOR**

Use this selector to select assembly editing or insert editing. Two types of insert editing can be selected: audio/video or video only.

⑮ **VIDEO DUBBING SWITCH**

Use this switch at video dubbing. Set this switch to "DUB" position, and playback pre-recorded tape. The signal output from this unit will be dubbed to another unit without disturbance.

⑯ **REWIND/EJECT BUTTON**

Press this button to rewind the tape rapidly. When the tape is completely rewound, the video cartridge will pop out for easy removal.

⑰ **FAST FORWARD BUTTON**

Press this button to forward the tape rapidly.

⑱ **PLAY BUTTON**

Press this button to play the tape. When the tape ends, the tape rewinds automatically and the cartridge is ejected.

⑲ **STOP BUTTON**

Press this button to stop the tape at any mode, or to release the Record Button ㉑ .

⑳ **AUDIO DUBBING BUTTON**

To replace an audio recording with another, press this button and record.

㉑ **RECORD BUTTON**

To record on cartridge tape, press the Play Button ⑱ after pressing this button. To release this button, press the Stop Button ⑲ .

㉒ **INDICATOR LAMPS**

Illuminate when the corresponding function button is pressed.

㉓ **SKEW CONTROL**

Playback image distortion in the upper portion of the monitor screen can be minimized by adjusting this control.

㉔ **TRACKING CONTROL**

Turn this control to remove the "tracking noise" in the image which may appear when a tape recorded on another recorder is played back. Set to the "FIX" position for tapes recorded on and played back on this unit.

㉕ **TV/CAMERA-1/CAMERA-2 SELECTOR**

Use this selector to select the TV monitor (connected to the TV Monitor Connector ㉝) or the camera (connected to the Camera Input Connectors ㉞) as the recording source.

㉖ **COLOUR-B/W SELECTOR**

Use this selector to select colour or B/W program in both record and playback mode.

㉗ **SYNC MODE SELECTOR**

Use this selector to synchronize the tape speed with two types of signals; internal (power line) and normal (incoming video).
When sync is not obtained during playback, place the selector to "INT. SYNC" position.

㉘ **POWER SWITCH**

Press this switch to turn on the unit.
Press again to turn off.

(Rear)

㉙ **REMOTE CONTROL CONNECTOR**
For connection of a remote controller.

㉚ **VOLTAGE SELECTOR**
Use a blade screwdriver to set to local voltage (200V, 220V or 240V).

㉛ **COLOUR LOCK**
Refer adjustment to qualified service personnel.

㉜ **VIDEO OUTPUT CONNECTOR**
For playback on a TV monitor.

㉝ **TV MONITOR CONNECTOR**
For connection of a TV monitor (having an 8-pin terminal) by using the VTR-monitor connection cable.

㉞ **CAMERA INPUT CONNECTORS**
Connect the video camera to this terminal.
Two cameras can be connected at the same time. Set the TV/Camera-1/Camera-2 Selector ㉕ to select the input video signal.

㉟ **AUDIO LINE OUTPUT JACK**
For connection with an external power amplifier or a speaker system.

㊱ **AUXILIARY AUDIO INPUT JACK**
For direct recording from an auxiliary sound source, such as a radio, tuner, Hi-Fi system, audio tape recorder, etc.
When using this jack, disconnect the input connected to the Mic Input Jack ㊲.
When using this recording method, make sure that the volume control of the external sound source is set at a low level.

㊲ **MICROPHONE INPUT JACK**
For connection with impedance 600Ω – 10KΩ microphone (optional).
When using this jack, disconnect the Auxiliary Audio Input Jack ㊱.

㊳ **AC POWER CORD**

Rear Panel

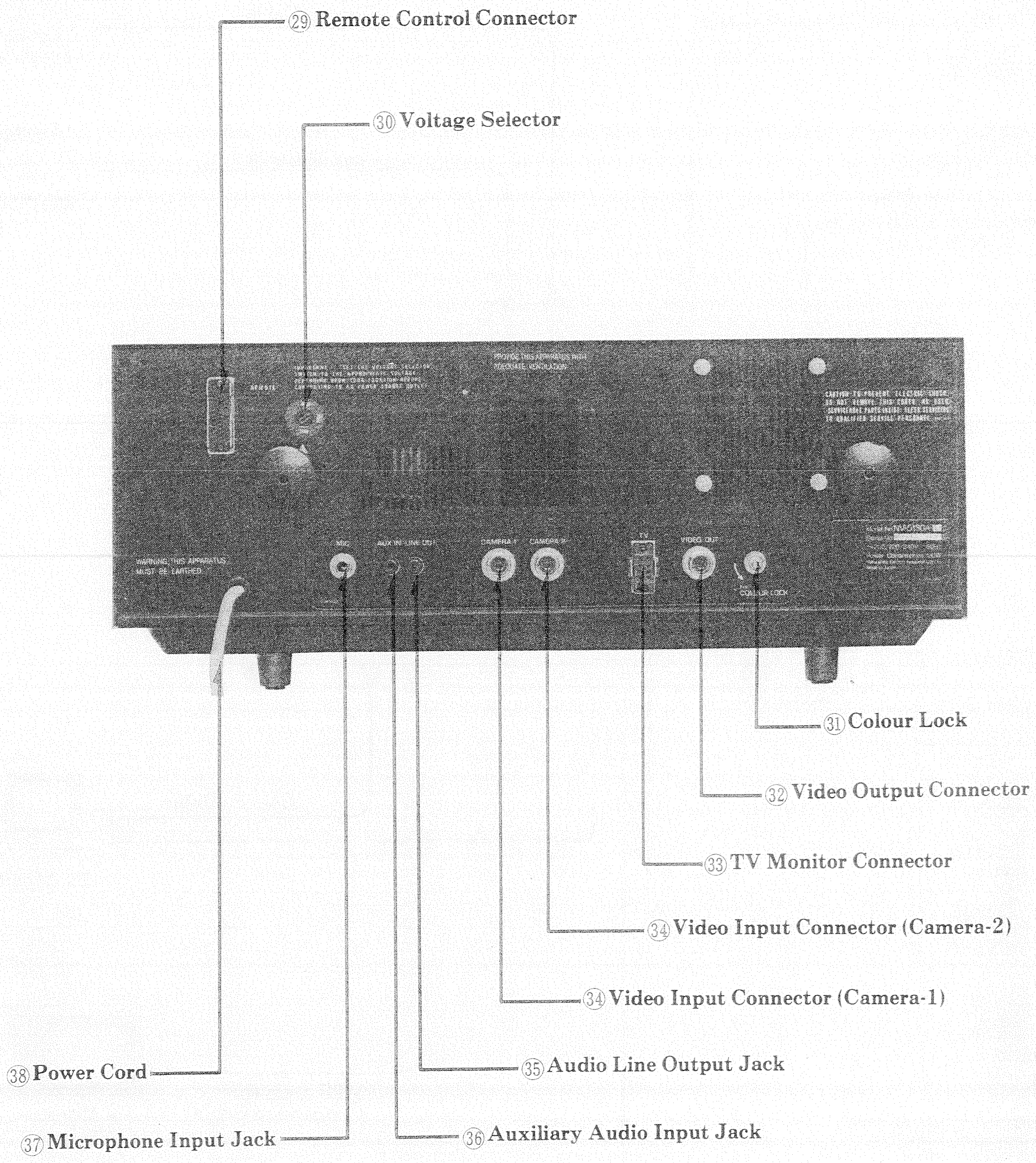

㉙ Remote Control Connector
㉚ Voltage Selector
㉛ Colour Lock
㉜ Video Output Connector
㉝ TV Monitor Connector
㉞ Video Input Connector (Camera-2)
㉞ Video Input Connector (Camera-1)
㉟ Audio Line Output Jack
㊳ Power Cord
㊲ Microphone Input Jack
㊱ Auxiliary Audio Input Jack

Fig. 2

GENERAL CONNECTION & APPLICATIONS

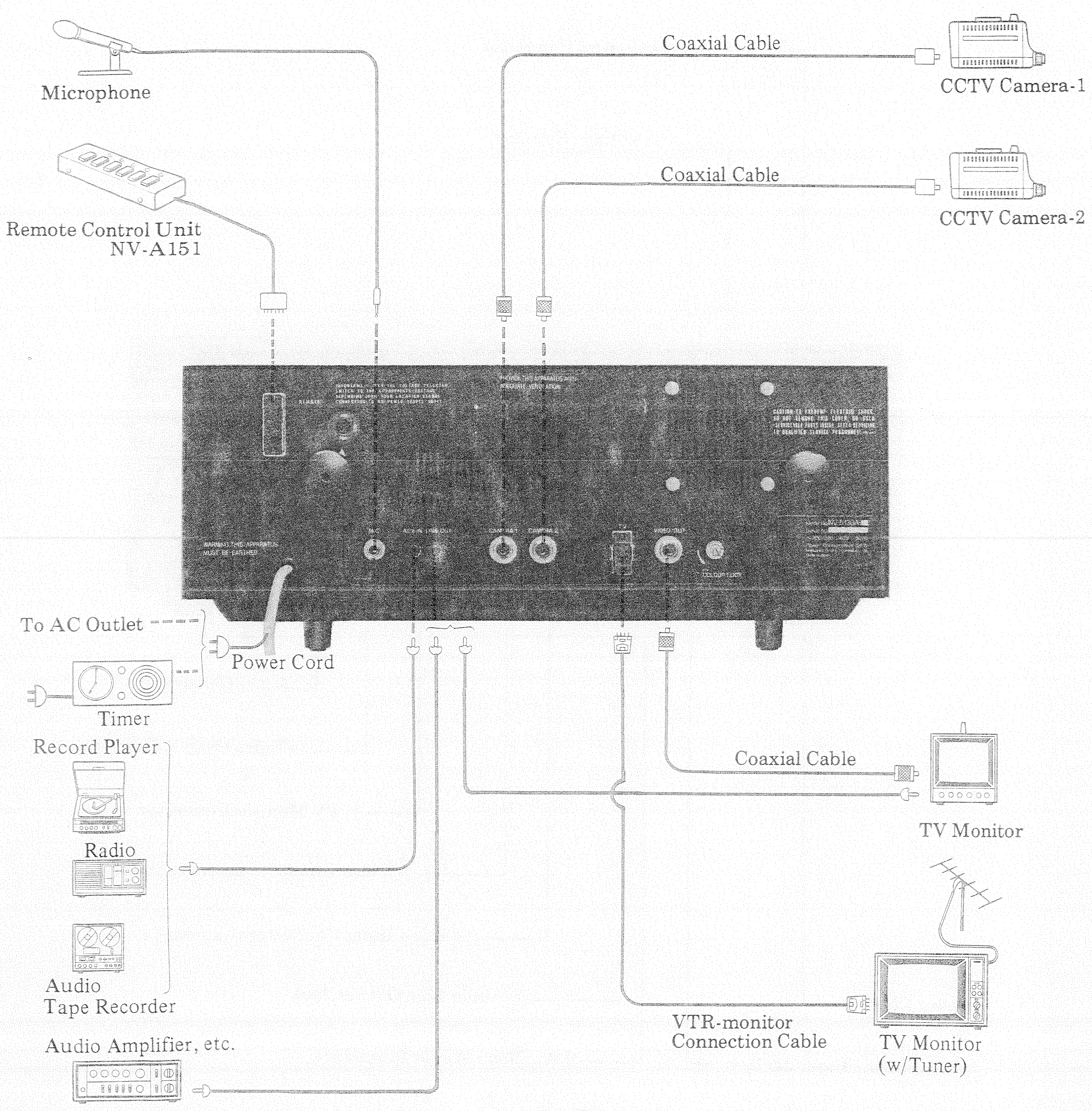

Microphone
Coaxial Cable
CCTV Camera-1
Remote Control Unit
NV-A151
Coaxial Cable
CCTV Camera-2
To AC Outlet
Power Cord
Timer
Record Player
Radio
Audio
Tape Recorder
Audio Amplifier, etc.
Coaxial Cable
TV Monitor
VTR-monitor
Connection Cable
TV Monitor
(w/Tuner)

Fig. 3

TAPE THREADING OPERATION

The great difference between an open reel VTR and a cartridge VTR is the action of tape threading.

For an open reel VTR a tape is threaded from a supply reel to a takeup reel by hand, but for a cartridge VTR, a tape is threaded automatically. And a cartridge tape has one reel in a cartridge container, and another one is setting in the deck.

Tape transportation is explained as follows.

When the cartridge tape is inserted into the cartridge compartment, rotation is transmitted to the forward roller from the motor.

And the tape is forwarded automatically from the cartridge container (supply reel) to the takeup reel along the leader guide.

The auto-therading process and mechanical function in the each mode are explained below.

(This figure is PLAY mode)

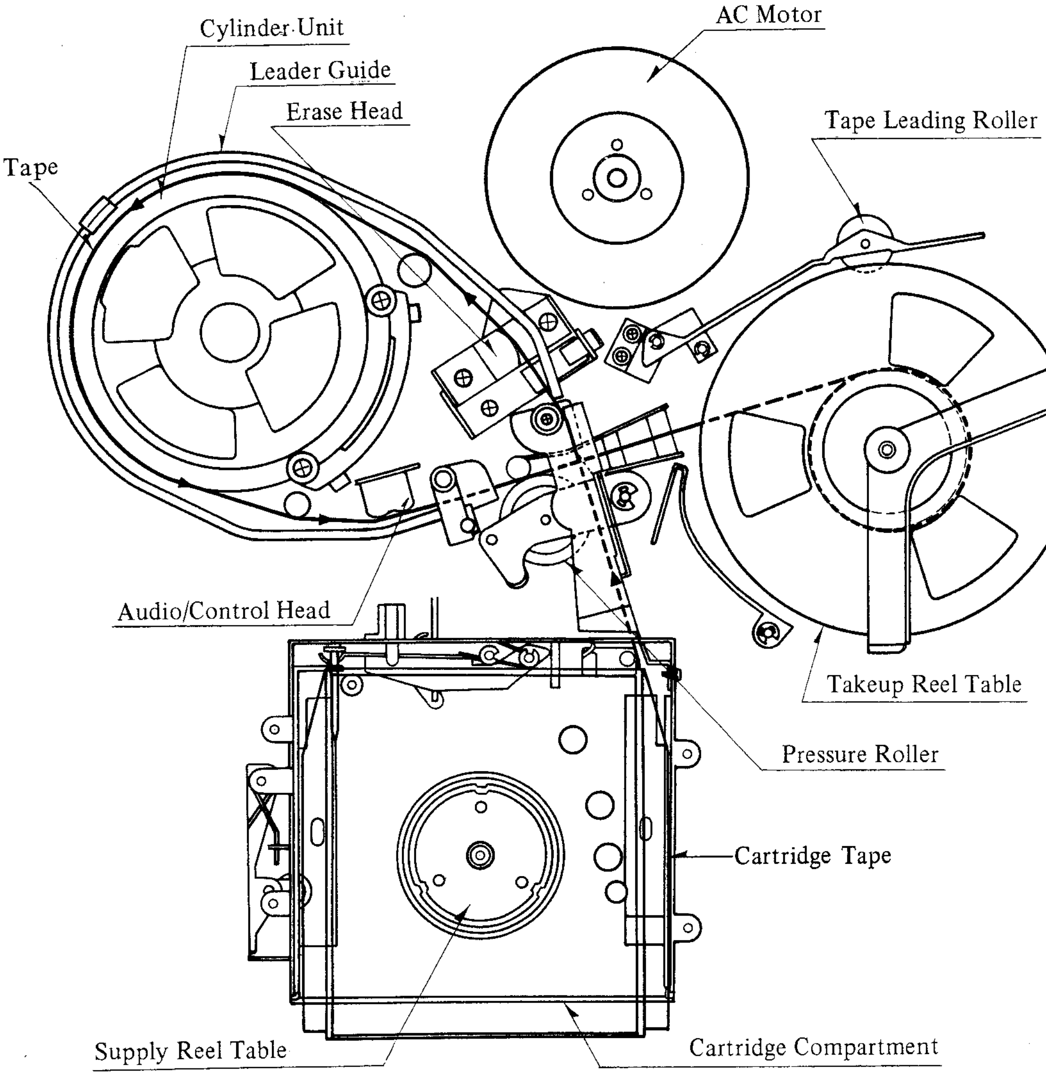

AC Motor
Cylinder Unit
Leader Guide
Erase Head
Tape Leading Roller
Tape
Audio/Control Head
Takeup Reel Table
Pressure Roller
Cartridge Tape
Supply Reel Table
Cartridge Compartment

Fig. 1

1) AT INSERTION OF CARTRIDGE TAPE (TAPE SUPPLY)

The drawing shows the state when the cartridge tape is inserted into the cartridge compartment.

1. When the cartridge tape is inserted into the cartridge compartment the slide plate is depressed in the arrow direction, and the action arm (for reel table up-down unit) is also depressed (at the same time, the reel table is up). Thereby, the cartridge eject lever is moved and locks the action arm.
2. At the same time, the mis-erase prevention lever moves in the arrow direction and the recording prevention lever is moved. (This function only works when the record button (red button provide on cartridge tape.)
   And then, the mis-erase prevention switch actuator is moved to turn the switch on.
3. The forward action lever moves in the arrow direction, and thereby, the forward roller is connected with the differential gear unit and supply reel table unit, and the tape leading lever (roller) is connected with the takeup reel table.
   At the same time, the action pin (mounted on the forward action lever) turns the forward switches on.
   The forward switches are mounted on the rear of the chassis.
4. And, the supply brake solenoid works and locks out the brake roller and turns the motor switch on. The takeup brake solenoid also works and locks out the brake shoe, and thereby F.F/PLAY roller connects with the takeup reel table.
   By these actions, the motor rotates in the arrow direction and the rotation is transmitted to the head unit, capstan, and intermediate roller and differential gear unit.
5. After the time, the leader tape runs from cartridge container to the takeup reel table through the leader tape guide as below.

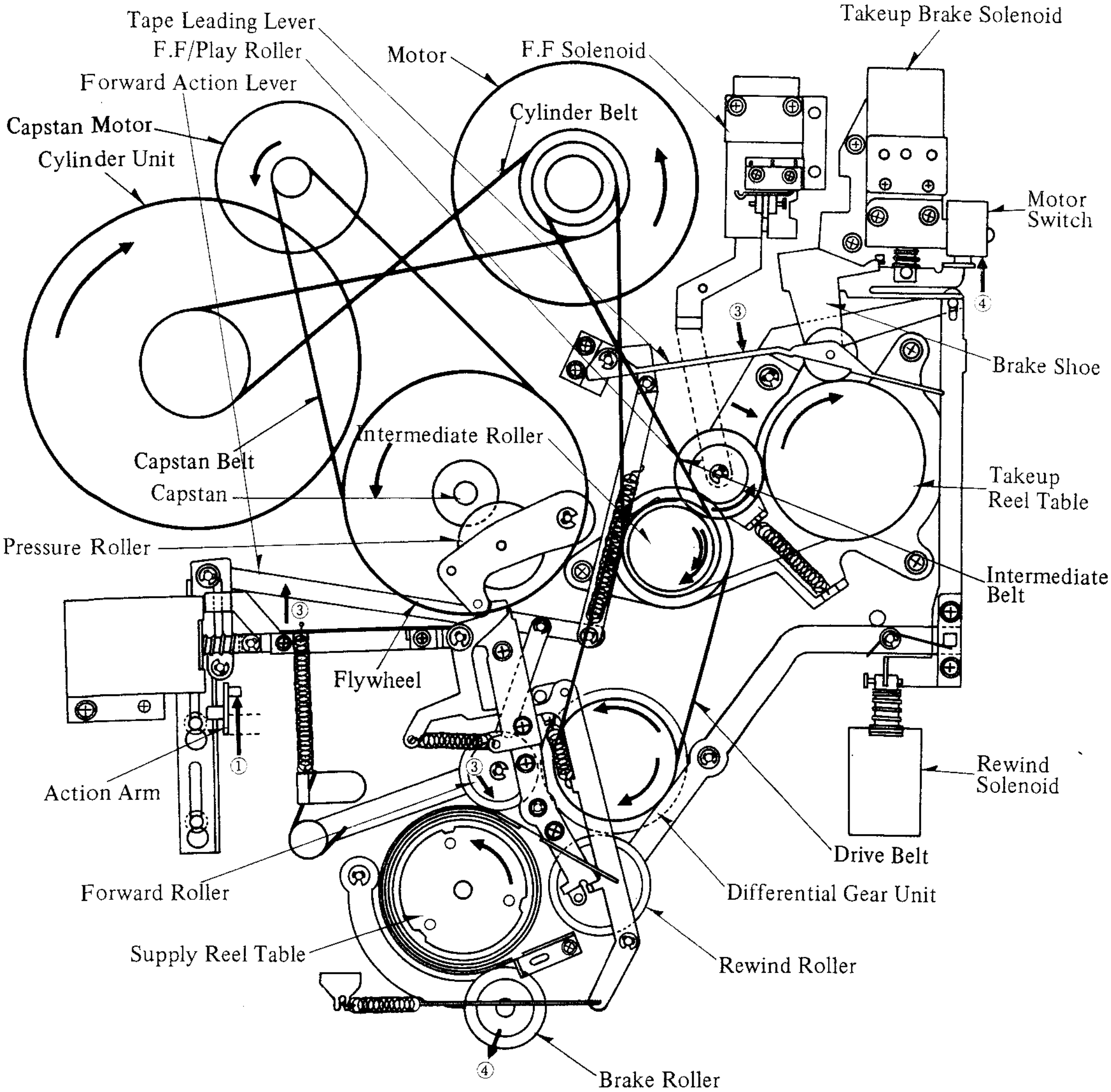

Tape Leading Lever
F.F/Play Roller
Forward Action Lever
Motor
F.F Solenoid
Takeup Brake Solenoid
Capstan Motor
Cylinder Unit
Cylinder Belt
Motor Switch
③
④
Brake Shoe
Intermediate Roller
Takeup Reel Table
Capstan Belt
Capstan
Pressure Roller
Intermediate Belt
③
Flywheel
①
Action Arm
③
Rewind Solenoid
Drive Belt
Forward Roller
Differential Gear Unit
Supply Reel Table
Rewind Roller
④
Brake Roller

Fig. 2

2) IN PLAYBACK (PLAY, AUTO PLAY) MODE

The drawing shows operation in auto play approx. 6~8 seconds after the cartridge tape is inserted.

1. When the tape changes from leader tape to video tape, the cds works, and thereby, the pressure roller solenoid is energized to move the ratchet action lever in the arrow direction.
2. As the ratchet action lever moves, the ratchet action lever pushes the ratchet and then, forward action lever returns as figure. Thereby, the tape leading lever (roller) leaves from the takeup reel table and forward roller also leaves from supply reel table.
3. At the same time, the pressure roller is depressed to the capstan shaft and the tension lever touches with the tape.
4. And then, the tape is taken up smoothly to the takeup reel.

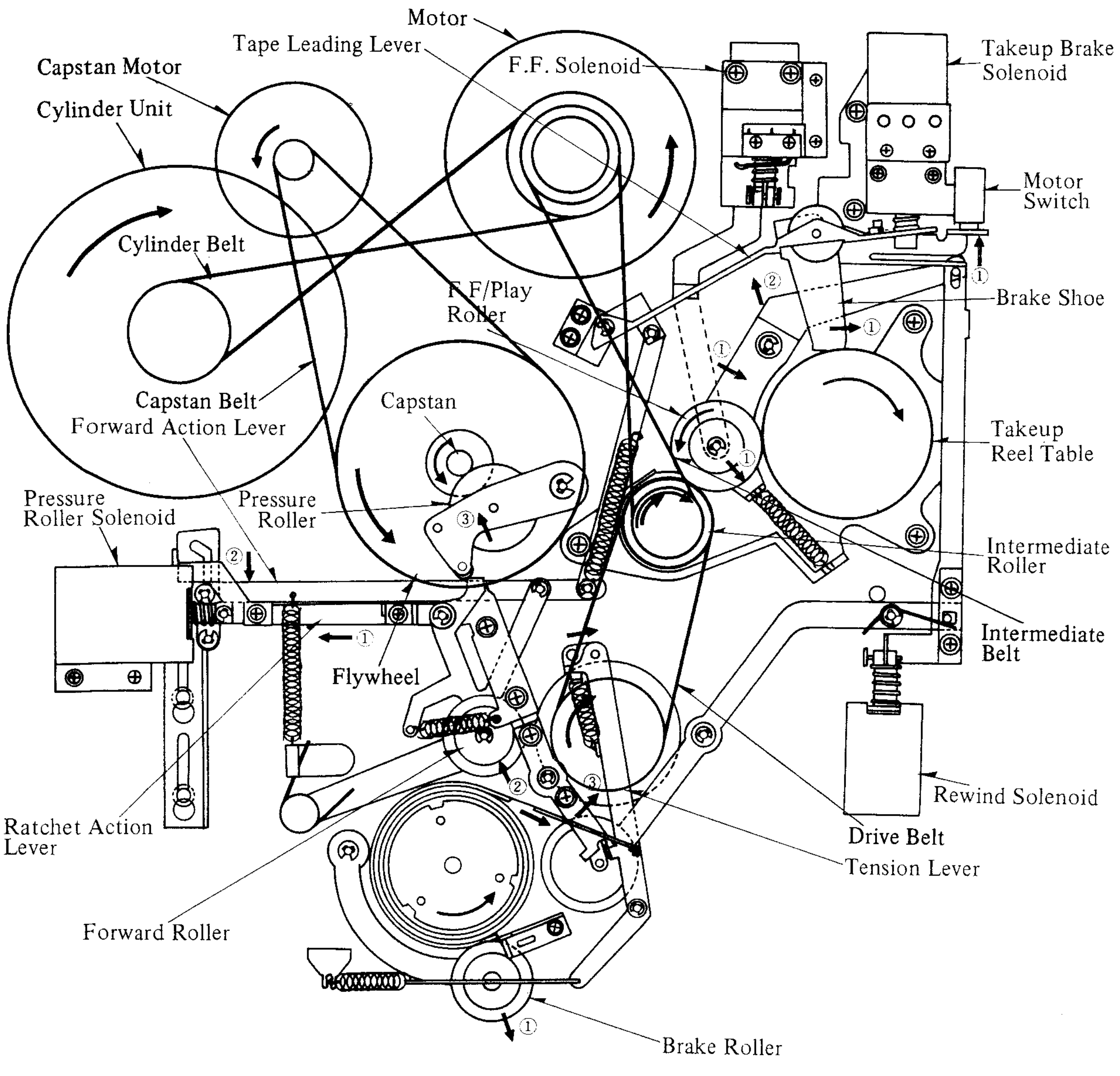
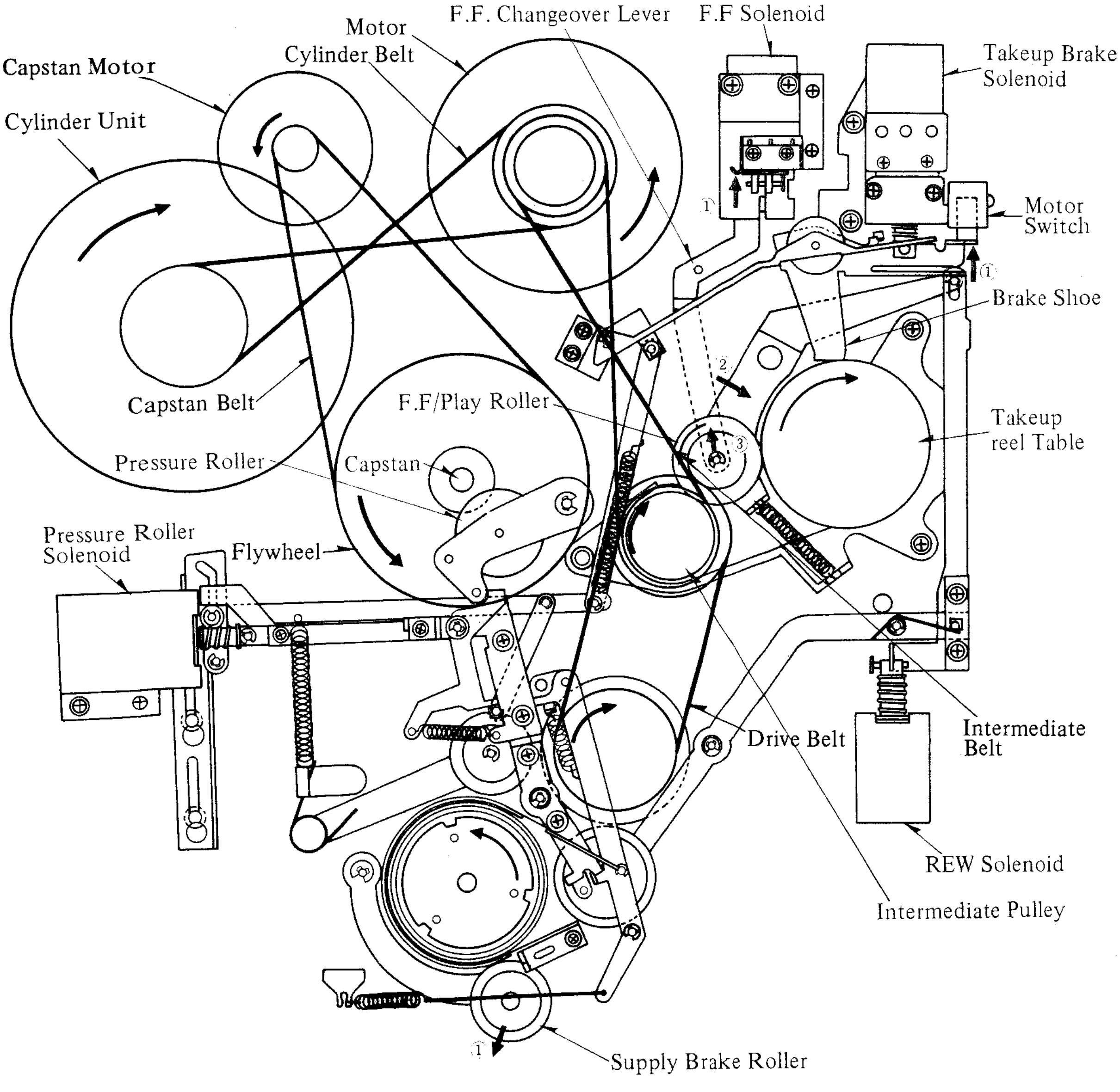

Motor
Tape Leading Lever
Capstan Motor
Cylinder Unit
F.F. Solenoid
Takeup Brake Solenoid
Motor Switch
Cylinder Belt
②
①
Brake Shoe
①
F.F/Play Roller
①
Capstan Belt
Forward Action Lever
Capstan
①
Takeup Reel Table
Pressure Roller Solenoid
Pressure Roller
③
②
Intermediate Roller
①
Flywheel
Intermediate Belt
②
③
Ratchet Action Lever
Rewind Solenoid
Drive Belt
Tension Lever
Forward Roller
①
Brake Roller

Fig. 3

3) IN FAST FORWARD MODE

The drawing shows operation when the F.F button is pressed.

1. When the F.F button is pressed, the supply brake solenoid and the takeup brake solenoid are energized to release the reel brakes.
2. And the F.F/PLAY roller connects with the takeup reel table and intermediate roller, and turns the motor switch on.
3. At the same time, the F.F solenoid works, and the F.F/PLAY roller is moved to the upper side of reel table by the F.F changeover lever (connected to F.F solenoid).



Motor
Cylinder Belt
F.F. Changeover Lever
F.F Solenoid
Capstan Motor
Cylinder Unit
Takeup Brake Solenoid
Motor Switch
Brake Shoe
Takeup reel Table
Capstan Belt
F.F/Play Roller
Pressure Roller
Capstan
Pressure Roller Solenoid
Flywheel
Drive Belt
Intermediate Belt
REW Solenoid
Intermediate Pulley
Supply Brake Roller
①
②
③

Fig. 4

4) IN REWIND (REW, AUTO REW) MODE

The drawing shows operation when the rewind button is pressed in the stop mode.

1. When the rewind button is pressed, the supply brake solenoid and the takeup brake solenoid is energized to release the reel brakes, and the motor switch turns on (the motor begins rotating).
2. At the same time, the rewind solenoid works in the arrow direction, and thereby, the rewind action lever is pulled and the F.F/PLAY roller is released from the takeup reel table.
3. Simultaneously, the rewind roller arm make the rewind roller contact with the supply reel table and differential gear unit, and the supply reel table is driven by rewind roller to rewind the tape.

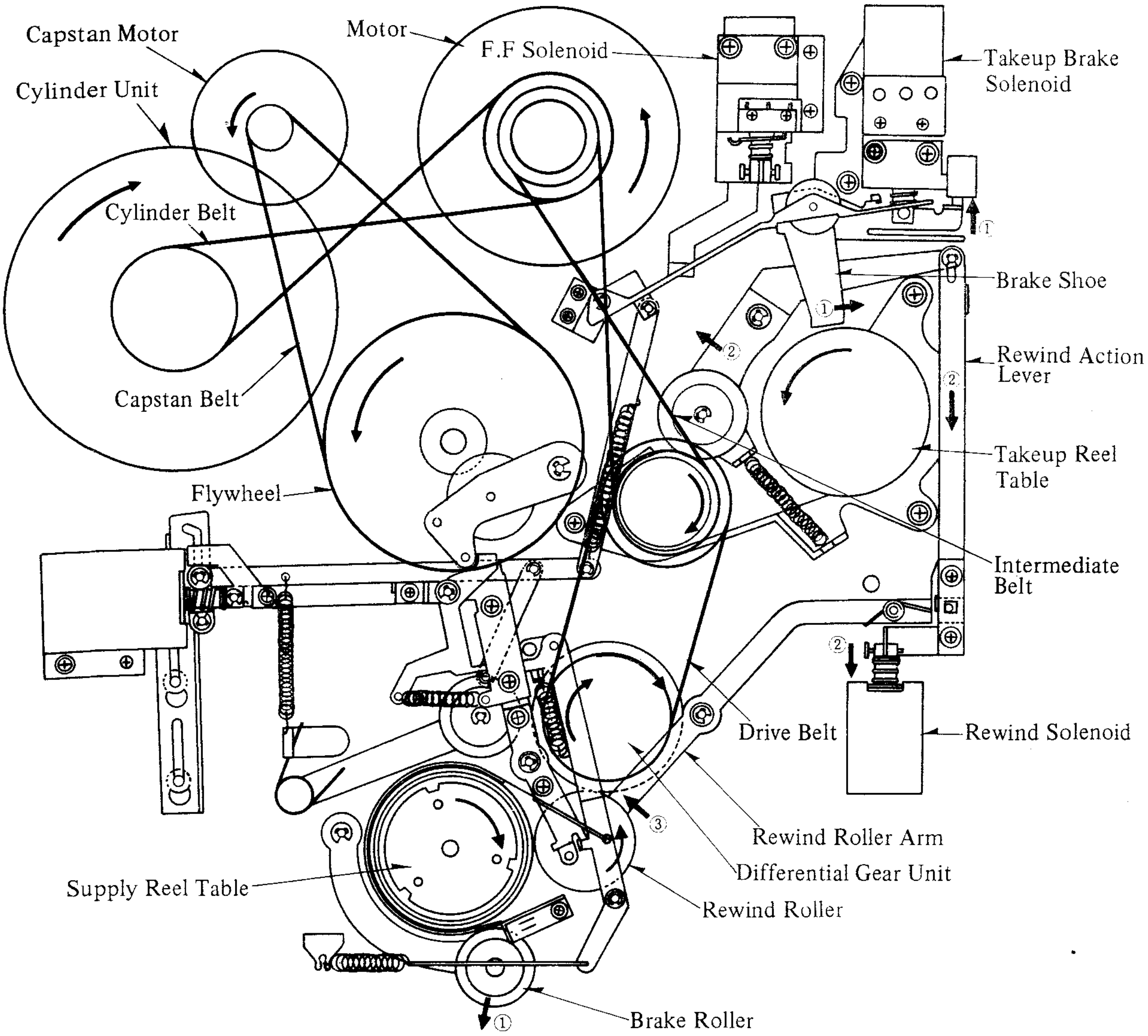

Capstan Motor
Cylinder Unit
Motor
F.F Solenoid
Takeup Brake Solenoid
①
Cylinder Belt
Brake Shoe
①
②
Rewind Action Lever
②
Capstan Belt
Takeup Reel Table
Flywheel
Intermediate Belt
②
Drive Belt
Rewind Solenoid
③
Rewind Roller Arm
Differential Gear Unit
Supply Reel Table
Rewind Roller
Brake Roller
①

Fig. 5

CIRCUIT DESCRIPTIONS

Power Supply Circuit

This is stable power supply circuit for +12V −12V and −16V. After DC voltage is produced by the bridge type rectifier circuit using 4 diodes, the stabilizing circuit makes up a stable power circuit for +12V, −12V and −16V.

Servo Control Circuit

This section consists of the drum motor control circuit, capstan motor control circuit, sync. selection circuit, and tracking adjustment circuit.

1. DRUM SERVO SYSTEM

1) Recording Mode

As reference signal for the servo circuit, V. sync. signal of video signal to be recorded is utilized.

Video signal supplied from terminal (3) of P25 enters terminal (16) of IC201, and passing through the V. sync separation circuit and 1/2 frequency-dividing circuit, it is fed out as 25Hz asymmetrical wave from out of terminal (10) of IC201. After this signal is differentiated at C212 and R202, only the negative portion is fed out by D201 and supplied to the video recording phase control circuit (monostable multivibrator; TR201, TR202). In the video recording phase control circuit, the time constant of the monostable multivibrator is so adjusted as to control the rotary head phase during video recording and switch 2 heads at every field immediately before V. sync signal (7±1H), thereby keeping the head switching noise from appearing on the picture. This signal is supplied to the sampling hold circuit (TR210).

On the other hand, 25Hz pulses representing the rotational phase of the rotary heads are fed out from terminals (6) and (4) of P22, amplified at TR204 and TR205, and then supplied to the phase comparison circuit (TR206, TR207). The output of the phase comparison circuit is supplied to the miller integration circuit (D202, TR209), being converted into trapezoid wave. Also, the output of the phase comparison circuit, as timing pulse, is supplied to the timing circuit.

The trapezoid wave of the miller integration circuit is supplied to the sampling hold (TR210) and sampled with the output of the video recording phase control circuit (sampling pulse). The output of the sampling hold, made into voltage variation (error voltage) from phase variation, goes through the darlington circuit (TR211, TR212) and is supplied to the phase equalization circuit (R235—R237, C222, D203—D206). When there is no error voltage, sampling pulse is so adjusted as to come to nearly the center of the slant part of the trapezoid wave.

The object of the phase equalization circuit is to improve the stability and responsibility of the servo loop which are specially required for use of the servo circuit. Whether servo is not on (error voltage getting large) or on (error voltage getting low) is distinguished by diodes (D203—D206). When the diodes change between ON and OFF, the circuit changes in construction so that the servo loop circuit can be more stabilized than conventional. The signal is then supplied, via the output circuit, to the brake coil.

2) Playback Mode

During playback, either the internal sync signal (supplied from 50Hz power source and waveform-converted at TR238—TR240) or the external sync signal (supplied from terminal (5) of P24), instead of V. sync signal, passes through the filter circuit and is supplied to terminal (12) of IC201, where it turns into reference signal for playback.

This reference signal, after pulse-amplification at IC201, is supplied through the monostable multivibrator (TR201, TR202) to the sampling hold (TR210). Also, the control signal reproduced at the control head is supplied from terminal (1) of P25 to terminal (3) of IC201 and controls the head rotation phase at the tracking control circuit so that video heads may properly pass through the recorded tracks during playback. For interchangeability, etc., the tracking has to be adjusted, and for the adjustment there is a knob protrudent on the control panel, serving as the tracking control. At TR210, trapezoid wave that has been converted from signal of the P.G. coil is applied, thereby controlling the brake current in the same manner as for the video recording mode.

2. CAPSTAN SERVO SYSTEM

1) Recording Mode

A control signal recording head (so called write head) and a control signal playback head (so called read head) are installed at an interval of about 6.35mm equivalent to 1 pitch of control signal.

Output of the non-stable multivibrator (TR219, TR220) is supplied via the control recording amplifier (TR221) to the write head and recorded on tape. The recorded control signal is reproduced at the read head, amplified at the control amplifier (IC201), delayed at the delay circuit consisting of monostable multivibrator (TR217, TR218), and triggers the aforementioned non-stable multivibrator. The control signal reproduced at the same time passes through TR216 and TR223, and is supplied to the sampling hold (TR226). While on the other hand, V. sync signal from terminal (9) of IC201 is supplied to the bootstrap circuit (TR224, TR225) and converted into trapezoid wave, which is sampled at the sampling hold with the control signal (sampling pulse). This output is let through the darlington circuit (TR227, TR228) and supplied to the phase equalization circuit (TR229, D215—D218), making the servo loop circuit more stable. Further through the output circuit, it is led to the DC motor control circuit and controls the capstan motor.

2) Playback Mode

Excepting that the control signal is not recorded, the same operation as above (recording mode) applies to the playback mode.

Regarding V. sync signal at terminal (9) of IC201, external sync signal (supplied from terminal (5) of P24) or internal sync signal (supplied from 50Hz power source and wave-converted at TR238—TR240) is used as the reference signal during playback.

CONSTRUCTION OF IC201

The diagram shows the construction of IC201 (AN301) used in the servo circuit.

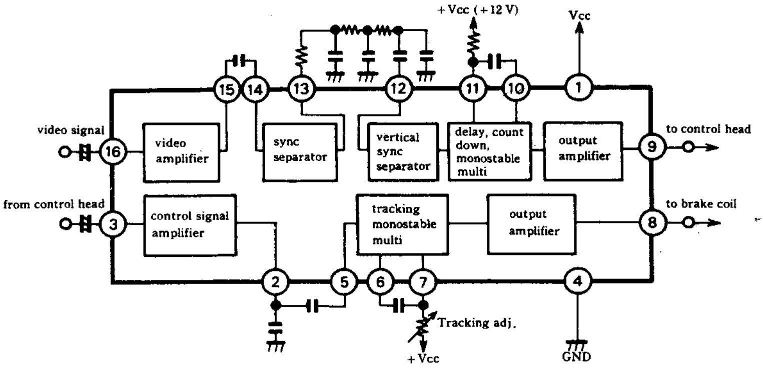

+Vcc (+12 V)
Vcc
video signal
from control head
to control head
to brake coil
video amplifier
sync separator
vertical sync separator
delay, count down, monostable multi
output amplifier
control signal amplifier
tracking monostable multi
output amplifier
Tracking adj.
+Vcc
GND
1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16

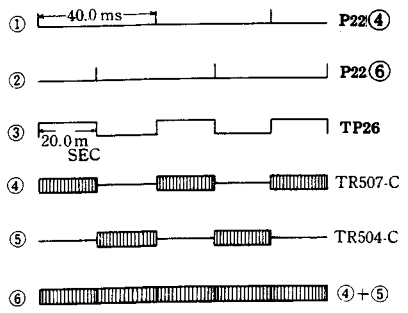
Fig. 1

Audio Circuit

Signals supplied from MIC and AUX are let through the pre-amplifier of TR401 and supplied to the base of TR402. Signal from the monitor TV is supplied directly to the base of TR402 and amplified. After the frequency characteristic is flattened at the equalizer (R419, C411) in the next stage, it is fed to the base of TR404. Being amplified there, the signal passes through the 95kHz audio trap (C417, L401) and is fed out as audio output from terminal (5) of P45. At the same time, the emitter output of TR405 and signal from bias circuit (TR412—TR415) join together and are fed to the audio head. R428 and C419 are provided in order to prevent reverse flow of bias. D411 is used to change recording current, and the recording equalizer (C421, R432) for recording. The meter circuit (TR407) and audio squelch circuit (TR408—TR411) are used to remove noise at the time of audio dubbing.

Head Switching Circuit

In addition to servo control of the video heads, the servo circuit feeds out the switching pulse for selecting the signal supplied from 2 video heads at each field (1/50 sec.) to make one continuous signal by this head switching circuit. This signal is supplied to the playback amplifier circuit and used for selection of FM signal.
The sampling pulses (1) and (2) which are generated at each 25Hz (40msec.) select playback signals (4) and (5), making them FM signals of continuous (6).


①
40.0 ms
P22④
②
P22⑥
③
20.0m SEC
TP26
④
TR507-C
⑤
TR504-C
⑥
④+⑤

Playback FM signals switching Operation.

Fig. 2

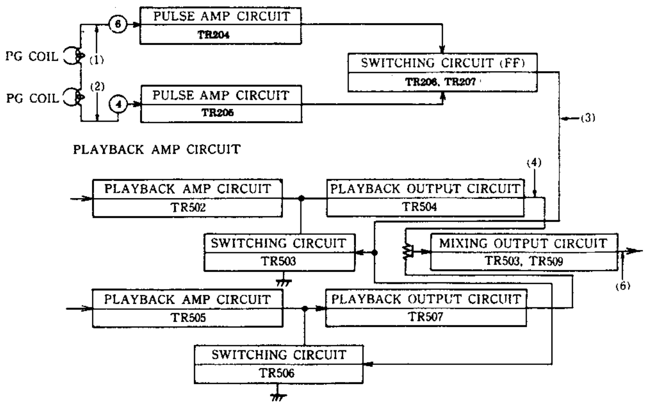

PG COIL
PG COIL
(1)
(2)
⑥
④
PULSE AMP CIRCUIT
TR204
PULSE AMP CIRCUIT
TR205
SWITCHING CIRCUIT (FF)
TR206, TR207
(3)
PLAYBACK AMP CIRCUIT
(4)
PLAYBACK AMP CIRCUIT
TR502
PLAYBACK OUTPUT CIRCUIT
TR504
SWITCHING CIRCUIT
TR503
MIXING OUTPUT CIRCUIT
TR503, TR509
(6)
PLAYBACK AMP CIRCUIT
TR505
PLAYBACK OUTPUT CIRCUIT
TR507
SWITCHING CIRCUIT
TR506

Fig. 3

While the video head (B) is moving on the tape, video head (A) does not read recorded signals on the tape, and if either output of the bistable multivibrator (whose collector voltage is approximately +12V in the OFF mode) is applied to the base of TR503 while the video head (A) rotates per a half cycle (20.0 msec), the collector and emitter of TR503 are short-circuited, whose output will be non-signal with no noises.

While the video head (B) reads FM signals on the tape (for 20.0 msec), one of the outputs of the bistable multivibrator (whose collector voltage is approximately zero in the ON mode) is applied to the base of switching transistor TR506. For this reason, the collector and emitter of TR506 are effectively disconnected and allow the FM signal to pass through.

At the moment when video head (A) and (B) are changed over, the base voltage of the switching transistor changes correspondingly.

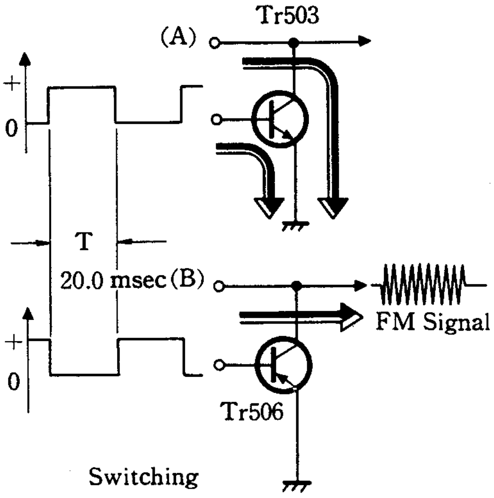


Fig. 4

Video Recording Circuit (VEP0832)

The video signal selected by the TV/Camera selector switch is supplied to the video recording circuit. When the input is colour signal, it is divided into the luminance signal portion and the chrominance signal portion. These signals are arranged as being able to record simply, and are composed again, being recorded on the tape through the video head.

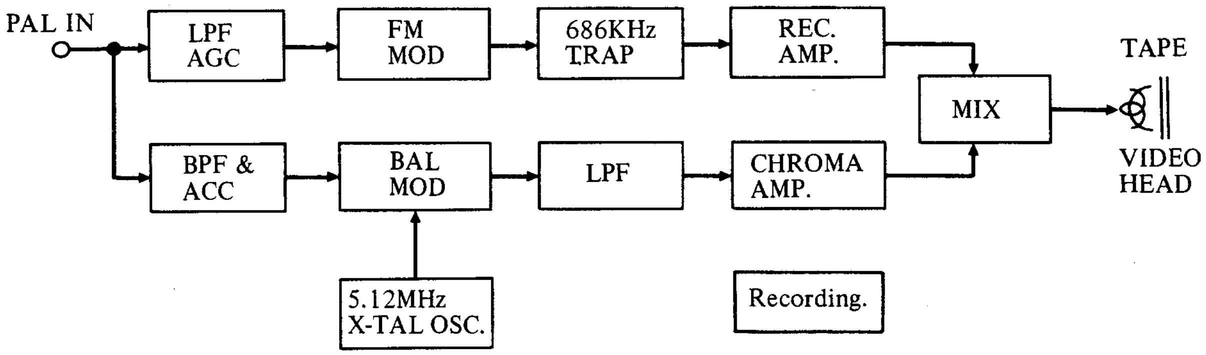


Fig. 5

1. LUMINANCE SIGNAL

The video signal is supplied to the luminance signal circuit (IC801) and the chrominance signal circuit (TR812). When the unit is placed in the colour mode, the signal supplied to the luminance signal circuit is supplied to the low-pass filter (FL801). Because this filter is designed for passage of signals at 0—3.2 MHz, 4.43 MHz sub-camer of colour signal is eliminated. Even colour signal, only the luminance signal is fed out. A 0.8 sec. delay line (DE801) is inserted to adjust the phase to chrominance signal which is delayed in phase.

When the unit is placed in the B/W mode, the signal supplied to the luminance signal circuit is supplied to the low-pass filter (FL802). Because this filter is designed for passage of signals at 0—4MHz, only the luminance signal is fed out.

Colour mode and B/W mode are switched by TR802 and TR804.

Next, these luminance signal goes through IC801 (AGC circuit, video amplifier, per-emphasis circuit, clamp circuit and white clip circuit), and is supplied to the FM modulator (TR806, TR807).

The FM modulator performs FM modulation so that the sync tip of video signal becomes 3.7MHz and the white peak 5.1MHz. And, when the unit is placed in the colour mode, the trap works by the switching transistor of TR809 and TR810.

* Input video signal supplied from VIDEO IN connector J6524 (8), in case of colour signal, shows a radio spectrum as shown in Fig. 6, whereas in case of B/W signal as shown in Fig. 7.

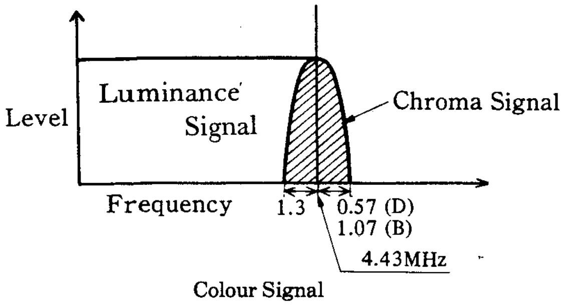


Fig. 6

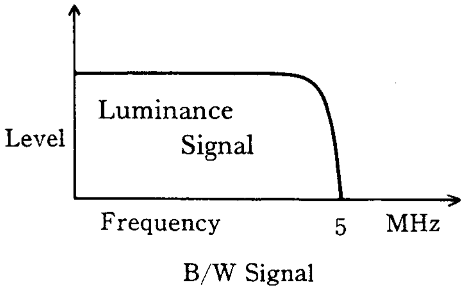


Fig. 7

AGC (AUTOMATIC GAIN CONTROL) CIRCUIT

This circuit keeps picture always at a fixed level even when the video input level is excessively high or low.

VIDEO & PRE-EMPHASIS CIRCUIT

In a FM circuit, noise increases at high frequency part when the video signal is FM-modulated. To prevent the noise from increasing, this circuit is used to previously emphasize the high-frequency part of the FM signal while supplying video signal.

CLAMP CIRCUIT

When the input video signal level varies, the average level of DC also varies. But the pre-emphasis circuit controls the transfer of the DC part, and the video signal varies according as zero level. As a result, the sync-tip level varies as shown in Fig. 8-b. As the sync-tip level varies, it becomes difficult to set the reference frequency when driving the next FM modulator. In order to solve this problem, the clamp circuit is provided for fixing the sync-tip at a certain level as shown in Fig. 8-a.

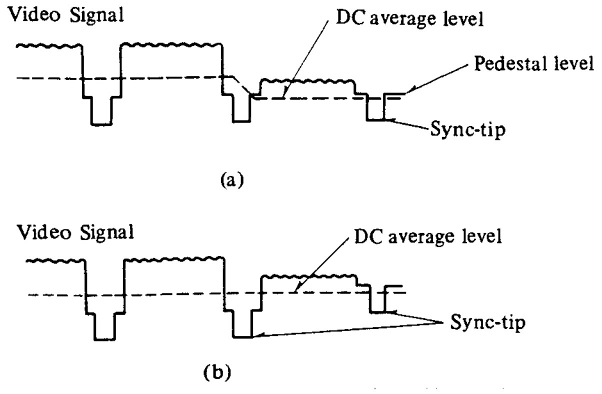


Fig. 8

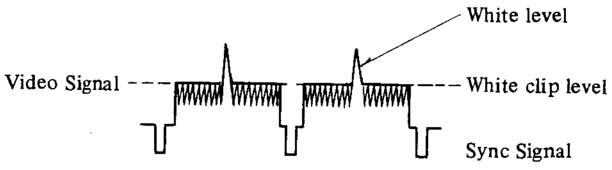


Fig. 9

WHITE CLIP CIRCUIT

Video signal enters the FM modulator and is emphasized. In the case of a high contrast between black and white, it becomes excessively modulated video signal in white portion. When the modulator is driven in this state, frequency deviates excessively at the white level part, resulting in over-modulation. If a video recording is mode in an extremely over-modulated condition, the frequency exceeds the limit of recording and playback ability with the video head, and the white-level signal in playback is distorted or playback becomes impracticable. In order to prevent the above-stated trouble, a white clip circuit serves to clip the white level.

FM MODULATOR, LIMITER CIRCUIT

This circuit modulates video signal into FM signal when recording video signal as FM signal on a tape. It is a non-stable multivibrator composed of TR806 and TR807.
Video signal is supplied to each transistor base, and by varying the base potential at this video signal level the oscillation frequency of the non-stable multivibrator is changed: 5.1MHz at the white level of video signal, or 3.7MHz at the sync tip level, is made to oscillate. FM-modulated output is fed out by T801, which feeds out FM output by push-pull operation, thereby improving both the level and waveform symmetry. R838 is also used as a variable resistor for balance adjustment of output waveform.
D801—802 on the secondary of T801 constitute a limiter circuit. When an AM content arises in FM signal due to a lowering of the high-frequency range component in FM output, it mixes with chrominance signal and changes in level when recording from the head to the tape.

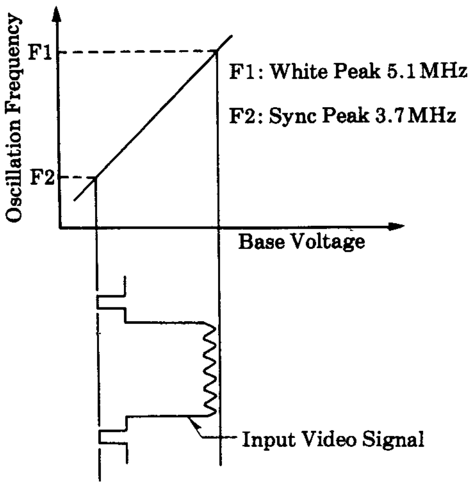


Fig. 10

CONSTRUCTION OF IC801 (AN302)

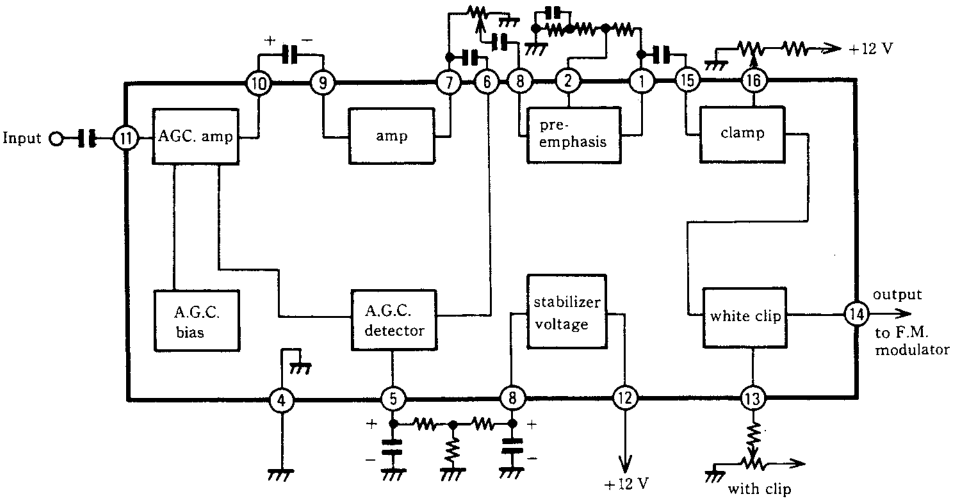


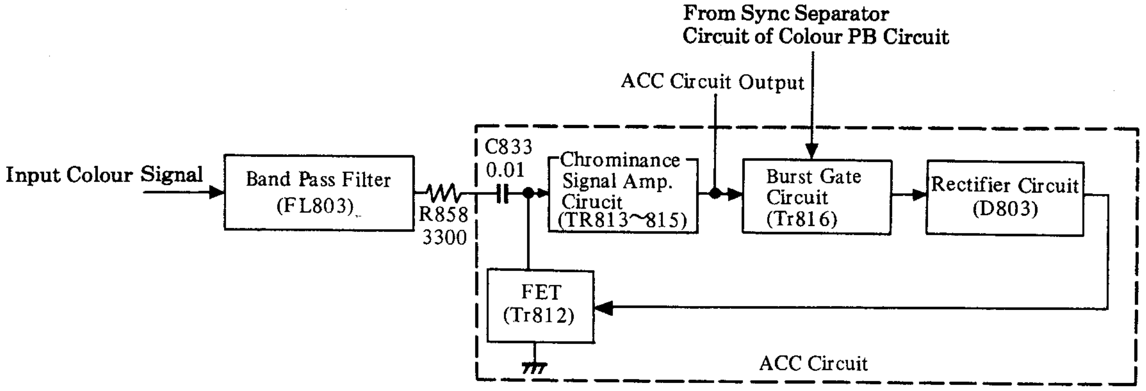
Fig. 11

2. CHROMINANCE SIGNAL

The signal supplied to the chrominance signal circuit passes the band-pass filter (FL-803), and only the chrominance signal if fed out.
The center frequency is 4.433619MHz (approx. 4.43MHz). This signal goes through the next ACC (automatic chroma gain control) circuit (Tr812—Tr816) and, at the balance modulator (D804, 805, Tr820), it is balance-modulated with the signal from the 5.119166MHz crystal oscillator (X801, Tr819).
Output signals from the balance modulator are 9.55MHz (summed component of both signals) and 686KHz (balanced component), but the balanced component 686KHz is extracted by the low-pass filter (FL804).

ACC CIRCUIT

The ACC circuit operates to maintain a certain ratio between the luminance signal and the chrominance signal in the colour signal when video recording in colour. By an amplitude of burst signal in the chrominance signal, it controls the saturation ratio of chrominance signal. The circuit is shown in Fig. 12.



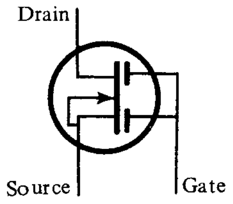
From Sync Separator
Circuit of Colour PB Circuit
ACC Circuit Output
Input Colour Signal
Band Pass Filter
(FL803)
C833
0.01
R858
3300
Chrominance
Signal Amp.
Ciruit
(TR813~815)
Burst Gate
Circuit
(Tr816)
Rectifier Circuit
(D803)
FET
(Tr812)
ACC Circuit

Fig. 12

The signal from the band pass filter goes into the chrominance signal amplifier of the ACC circuit. After it is amplified, only burst signal is extracted in the burst gate circuit and it is rectified. And it regulates the gate voltage of FET *(Field Effect Transistor) ups and downs.

If the chrominance signal voltage from the band pass filter becomes larger, an amplitude of burst signal becomes proportionally larger also, and the gate voltage of FET increases. And it operated to decrease the resistance between the source and the drain.

As a result, the input voltage of chrominance signal of amplifier is decreased and the current to FET will flow more.



Drain
Source
Gate

Fig. 13

* FET (Field Effect Transistor)

FET is a solid state which has higher internal input impedance than general transistors.

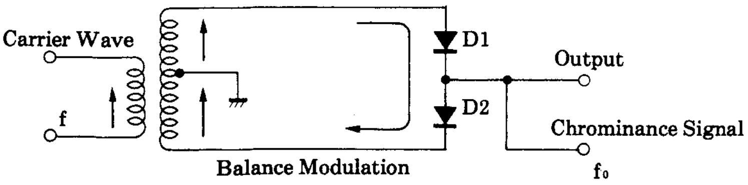
A slight change of the gate current increases the gate voltages greatly.

BALANCED MODULATOR CIRCUIT, LOW-PASS FILTER CIRCUIT

This circuit is used for conversion of 4.43 MHz chrominance signal into 686 kHz low-frequency range signal through balance modulation. The modulator used is a simple type ring modulator. While carrier wave is of positive polarity, diodes D_1 and D_2 are ON, carrier wave flows in the arrow direction, and no output comes out. In the case of negative polarity, D_1 and D_2 are turned OFF and oblique-lines part (See Fig. 15) appears as output.

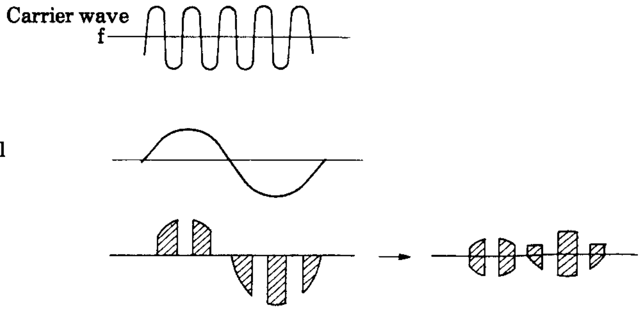
In this balanced modulator circuit, the carrier wave is 5.119 MHz and chrominance signal center frequency is 4.433619 MHz. Signal supplied from the balanced modulator includes 9.552 MHz (sum of both signals) and 686 kHz (balance). This signal is amplified at TR810 in the next stage, let through the low-pass filter (FL802) and only the signal of 686 kHz is fed out permitting low-frequency range conversion. TR819 is the oscillator circuit for 5.119 MHz.

Because this output is to be used as carrier wave signal for the balanced modulator circuit, oscillation should be accurate and for this purpose a crystal oscillator circuit is used.



Carrier Wave
f
D1
D2
Output
Chrominance Signal
f₀
Balance Modulation

Fig. 14



Carrier wave
f

Fig. 15

Video Playback Circuit (VEP0335)

The luminance signal supplied to this circuit, at first, is led to the drop-out compensator of IC301 (AN316). This IC has pre-Amp., high pass filter for eliminating the chrominance signal (FL301), amplitude limiter and etc., besides the drop-out compensator. Here, the amplitude limiter is used so that the drop-out compensator may operate completely.

After conection of the drop-out caused by the tape scars during playback at the drop-out compensator and passing through the limiter (IC302; AN304), the FM signal is supplied to the demodulator (T301, D302, 303) and converted into the video signal.

The signal from the demodulator is supplied to the noise canceller (IC303; AN303) through the low-pass filter (FL-302; B/W, FL-303; colour) and after the noise is removed, then is mixed with the chrominance signal supplied from terminal (7) of J6523 and then taken out as video signal. And, Tr305 and Tr306 are used for switching of colour and B/W, and Tr307 for sync separator to take out the sync signal of video signal.

FM DEMODULATOR CIRCUIT

Used to demodulated signal, which has been supplied from the limiter circuit, into video signal. First the limiter circuit output is supplied T301, R318, and is then differentiated at the differentiation circuit. At this time, the input signal is as high as several MHz and, in addition, it is fluctuating so that the time constant cannot be selected easily in the differentiation circuit of CR.

In this case, therefore, differentiation is effected with both R318 and L on the primary side of T301 Differentiated pulse is induced to the secondary of T301 (See Fig. 16) and undergoes both-wave rectification at D302 and D303.

Since the rectangular wave of input signal is FM, the repetion period of the rectangular wave is always changing. If so, the signal after rectification is fed out as rough or fine wave. This wave is therefore let through the low-pass filter to return into the original video signal.

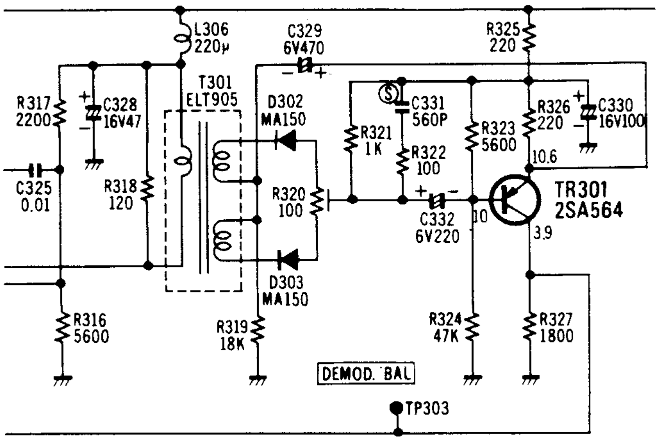

L306
220μ
C329
6V470
R325
220
T301
ELT905
R317
2200
C328
16V47
D302
MA150
C331
560P
R321
1K
R322
100
R323
5600
R326
220
C330
16V100
10.6
C325
0.01
R318
120
R320
100
C332
6V220
10
TR301
2SA564
3.9
D303
MA150
R316
5600
R319
18K
R324
47K
R327
1800
DEMOD. BAL
TP303

Fig. 16

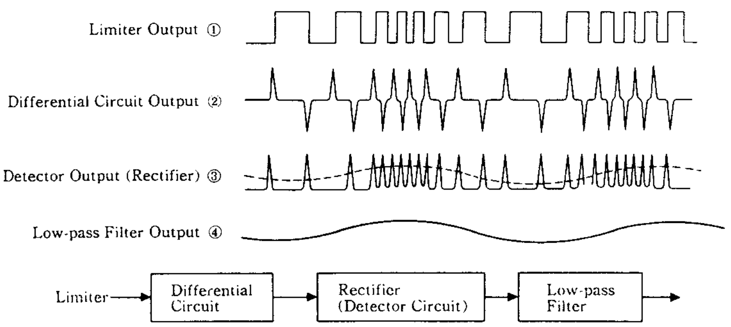

Limiter Output ①
Differential Circuit Output ②
Detector Output (Rectifier) ③
Low-pass Filter Output ④
Limiter
Differential Circuit
Rectifier (Detector Circuit)
Low-pass Filter

Fig. 17

DROP-OUT COMPENSATOR (IC301; AN316)

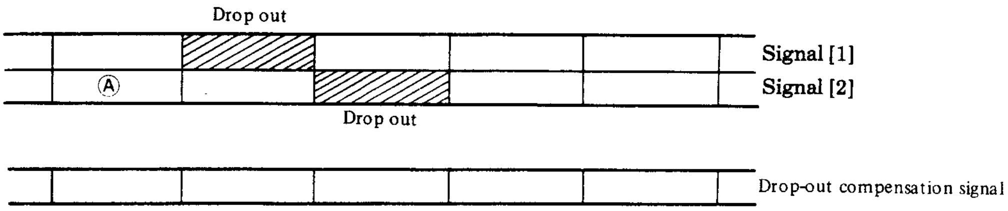

Drop out
Signal [1]
Ⓐ
Signal [2]
Drop out
Drop-out compensation signal

Fig. 18

The Drop-out compensator serves to compensate the drop-out in the luminance signal while playing back. Block diagram of IC301 (AN316) is shown in Fig. 19. FM signal from the terminal (17) of J6523 is supplied to the terminal (2) of IC301, and is distributed to two routes.

The signal [1] which is fed directly into the limiter (IC302), and signal [2] which is fed into IC302 via the 1H delay line (DL301). If the drop-out is caused within the 1H period (one horizontal scanning period) of the signal [1], the relation of signal [1] and signal [2] is shown in Fig. 18 (Signal [2] phase delayed 1H period). And, the drop-out in the signal [1] is compensated by portion (A) of the signal [2].

CONSTRUCTION OF IC301 (AN316)

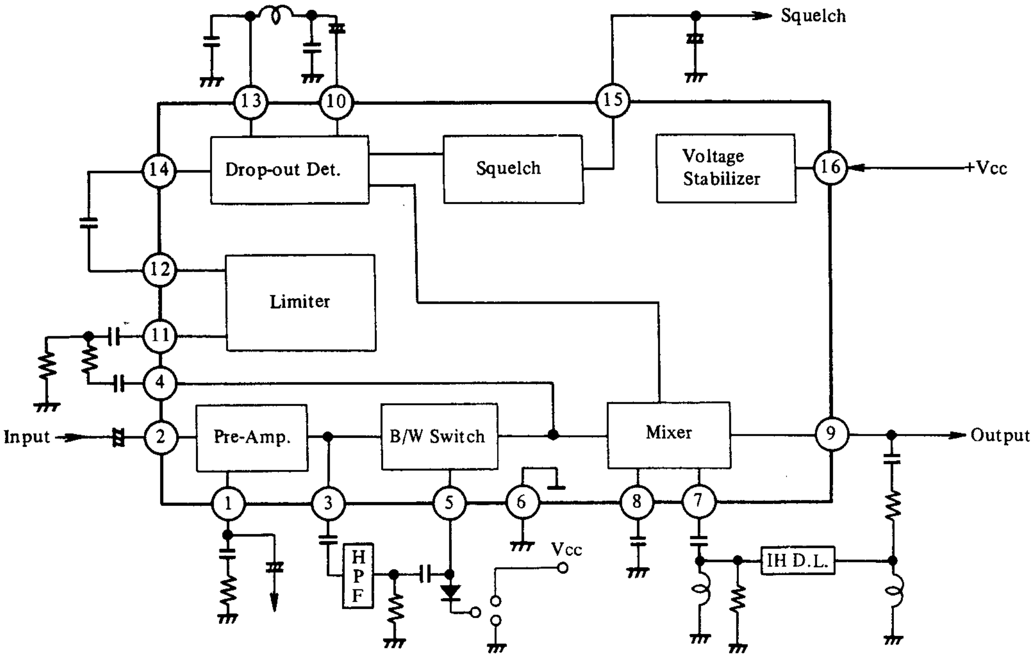

Squelch
13
10
15
Drop-out Det.
Squelch
Voltage Stabilizer
16
+Vcc
14
12
Limiter
11
4
Input
2
Pre-Amp.
B/W Switch
Mixer
9
Output
1
3
5
6
8
7
H P F
Vcc
IH D.L.

Fig. 19

NOISE CANCELLER (IC303, AN303)

This is designed for obtaining the better S/N video picture by concerning the noise containing in the signal from demodulator. The noise itself is proportional to the increase of frequency so that if the high frequency is eliminated as much as possible, the video S/N is improved.
At first, the high frequency portion is taken out by the high pass filter, and only noise portion is taken out by the limiter. Then, the phase of this noise portion is reversed, and is mixed with the former signal with noise. Therefore, the noise is cancelled.

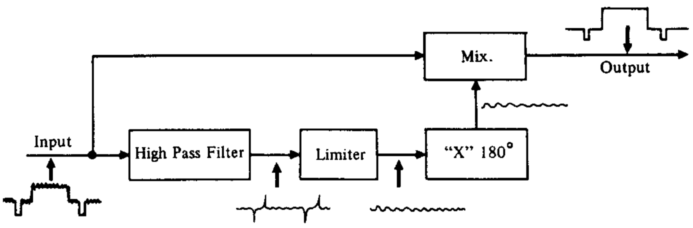

Mix.
Output
Input
High Pass Filter
Limiter
"X" 180°

Fig. 20

IC303 (AN303)

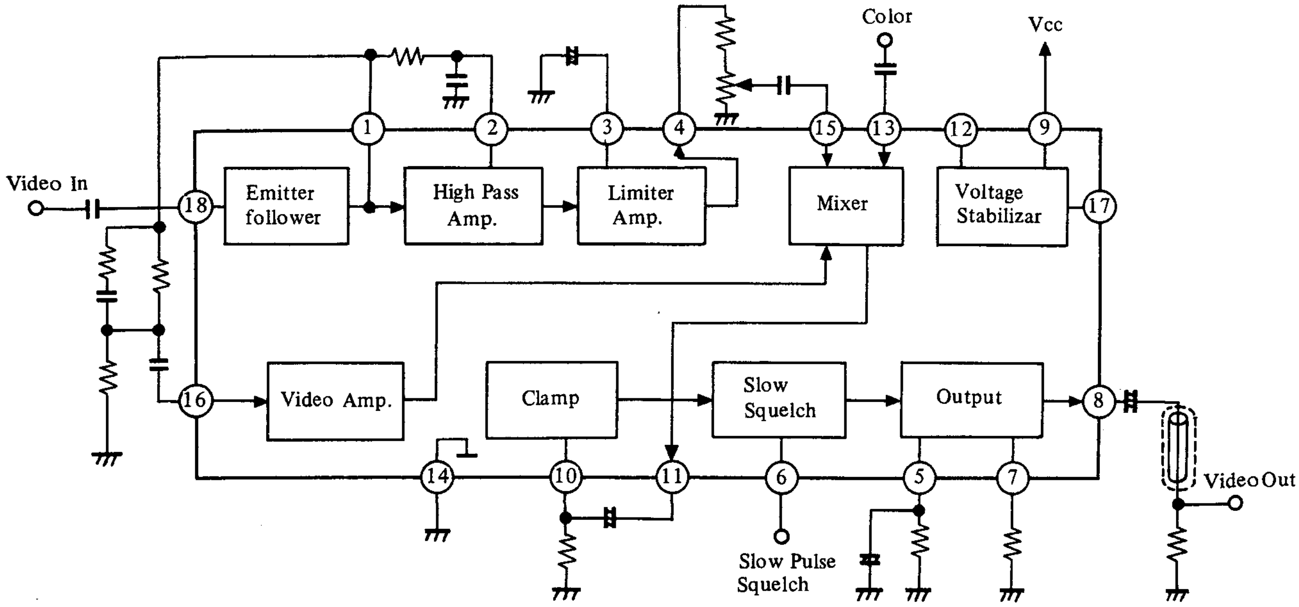

Color
Vcc
1
2
3
4
15
13
12
9
Video In
18
Emitter follower
High Pass Amp.
Limiter Amp.
Mixer
Voltage Stabilizar
17
16
Video Amp.
Clamp
Slow Squelch
Output
8
Video Out
14
10
11
6
5
7
Slow Pulse Squelch

Fig. 21

CONSTRUCTION OF IC302 (AN304)

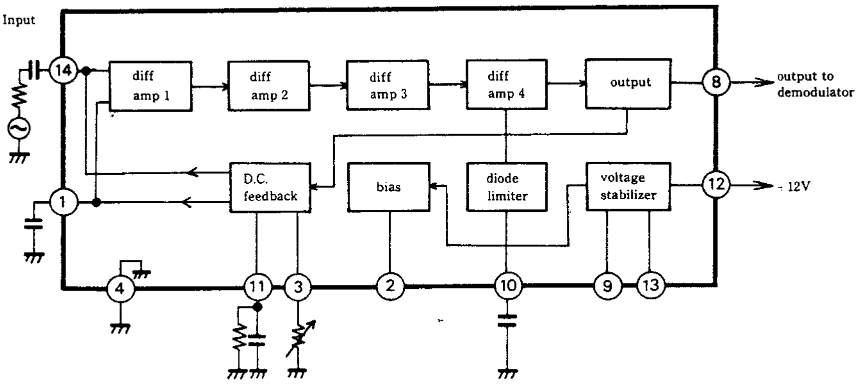

Input
14
diff amp 1
diff amp 2
diff amp 3
diff amp 4
output
8
output to demodulator
D.C. feedback
bias
diode limiter
voltage stabilizer
12
12V
1
4
11
3
2
10
9
13

Fig. 22

Colour Playback Circuit (VEP0831)

The chrominance signal supplied from J6522 (2) to the chrominance signal circuit during playback, is eliminated the luminance signal and removed the jitter (variation of time axis) in playback signal caused by tape elongation, contraction and tape speed variation, to obtain the playback colour picture distinct and stable.

For removal of jitter, a combination of the heterodyne system and APC/AFC is used.

Signal supplied from J6522 (2) to this circuit passes through the chrominance signal amplifier (Tr8201) and the low-pass filter (FL8201) to remove the luminance signal, and it is converted into 686kHz$+\Delta f_1$ low-frequency portion (Δf_1 =time axis variation caused by jitter contained in playback signal). After passing through the ACC (Automatic Chroma Gain Control) circuit (Tr8202—Tr8205) which controls playback chrominance signal saturation ratio, it is then supplied to the balance modulator (1) (D8207—D8210) and the balance modulator (3) (D8203—D8206) respectively.

The signal fed to the balance modulator (3) is balancemodulated with the output signal of the APC (Automatic Phase Control) circuit (Tr8216) which is divided into 1/4 in IC8201 and passes through the balance modulator (2), the band-pass filter (FL304) and the phase modulator (Tr8218—Tr8222). The APC circuit free-oscillates 1.432 MHz signal with a fluctuating element (Δf_2), and therefore, the oscillation frequency of this APC circuit is 1.432MHz$+\Delta f_2$ and becomes 358kHz $+\Delta f_2/4$ by the 1/4 divider. In the balance modulator (2) of Video playback Circuit (VEP0335), 358kHz $+\Delta f_2/4$ and the output from the 4.76MHz oscillator (X301, Tr308) are balance-modulated and supplied to the next band-pass filter (FL304) to obtain the summed component, 5.119MHz $+\Delta f_2/4$. The 5.119MHz $+\Delta f_2/4$

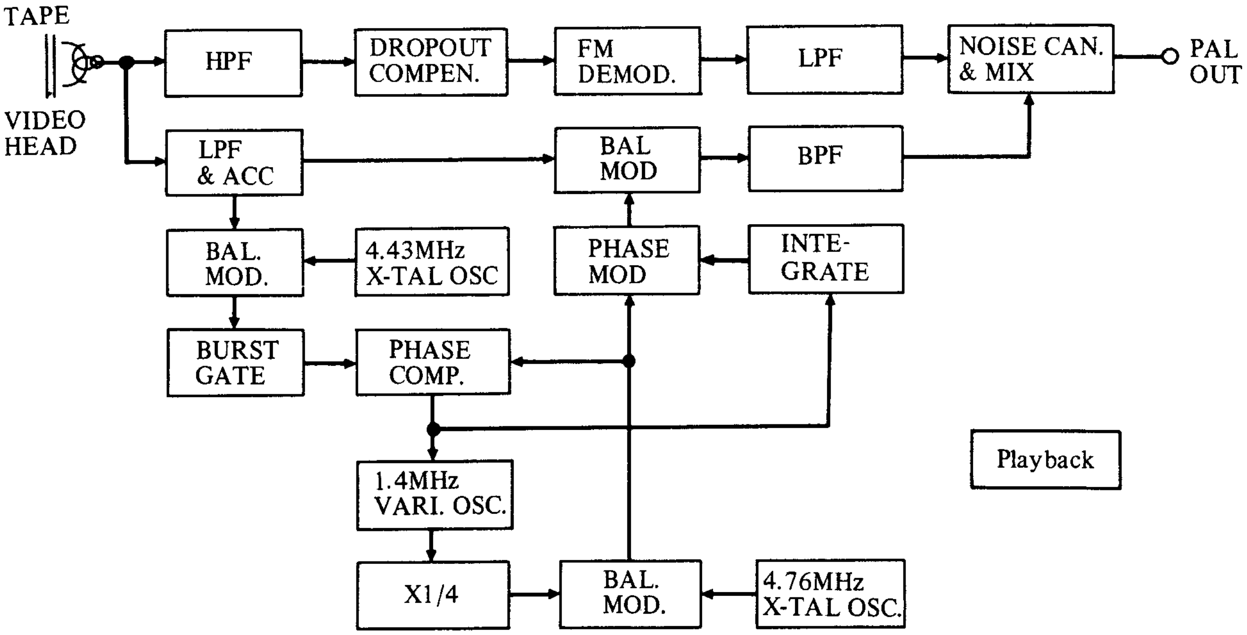
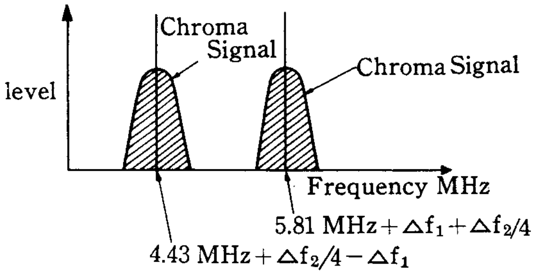

TAPE
VIDEO HEAD
HPF
DROPOUT COMPEN.
FM DEMOD.
LPF
NOISE CAN. & MIX
PAL OUT
LPF & ACC
BAL MOD
BPF
BAL. MOD.
4.43MHz X-TAL OSC
PHASE MOD
INTE-GRATE
BURST GATE
PHASE COMP.
Playback
1.4MHz VARI. OSC.
X1/4
BAL. MOD.
4.76MHz X-TAL OSC.

Fig. 23

and output signal (686 kHz $+\Delta f_1$) from the ACC circuit are balance-modulated in the balance-modulator (3). The output from this balance modulator (3) is the summed component, 5.81 MHz $+\Delta f_1+\Delta f_2/4$, and the balanced component, 4.43 MHz $+\Delta f_2/4-\Delta f_1$, as center frequencies (See Fig. 24). The circuit is so designed that $\Delta f_2/4$ and Δf_1 among the oscillation frequencies from the APC circuit become equal. This signal passed through the band-pass filter (FL8202) in order to obtain the balanced component becomes only 4.43 MHz without the fluctuating elements and the chrominance signal fluctuation caused by the jitter in playback is eliminated to obtain a distinct chrominance signal.

If the fluctuating element Δf_1 is too big, the APC circuit may often not be able to perform function fully.

In order to widen the control range, AFC circuit is installed.


Chroma Signal
Chroma Signal
level
Frequency MHz
5.81 MHz + $\Delta f_1+\Delta f_2/4$
4.43 MHz + $\Delta f_2/4-\Delta f_1$

Output of Balance Modulator (3)

Fig. 24

ACC CIRCUIT

The ACC circuit during playback operates differently during video recording. The signal supplied from the low-pass filter (FL8201) is amplified in the chrominance signal amplifier of the ACC circuit, then led to the balance modulator for high-frequency portion conversion and balance-modulated with the signal from the 4.43 MHz oscillator. The output of the balance modulator (1) becomes 5.119 MHz $+\Delta f_1$ as it passes through the band-pass filter (FL8203).

The signal supplied to the burst gate circuit (Tr8205) is extracted only the burst signal and rectified, and it causes FET gate voltage to change. The reason why this circuit is used for high-frequency portion conversion of the chrominance signal amplifier output is that in the low-frequency range the number of burst signalwave is not enough and the DC level is prevented from change.

PHASE MODULATOR (Tr8218—Tr8222) & INTEGRATION CIRCUIT (Tr8213—Tr8215)

Output of the phase comparator (T8205, D8215, 8216) in the APC circuit includes error signal. The output is partially supplied, through D8219, to the APC oscillator. This error signal therefore affects the control of the APC oscillator. The other signals are supplied to the integration circuit and converted into the integrated waveforms.

Since the burst signal differs in phase by 90° at every one horizontal period, the error signal has a rectangular wave component. Also, the error signal supplied to the APC oscillator has a rectangular wave component and, therefore, there is a difference in phase.

The continuous wave which passes through the 1/4 frequency divider, balance modulator (2), band-pass filter (FL304) is supplied to the phase modulator also varies in phase.

The phase variation component (phase distortion) can be removed by means of the phase modulation which is made by supplying the integration circuit output and the continuous wave (having the phase variation) to the phase modulator. Because the amplitude varies according to the phase modulation, the limiter (D8221, D8222) is provided at next stage.

APC CIRCUIT (AUTOMATIC PHASE CONTROL)

In order to equalize $\Delta f_2/4$ and Δf_1, the phase comparison between the burst signal from the burst gate circuit (Tr8212) and the continuous wave signal from J6522 (7) is required in a phase comparator.

In accordance with the phase difference, the control voltage is produced and is converted to direct current. This direct current is applied to a variable capacitance diode (D8219) as a phase difference voltage.

Due to this voltage, a capacitance of variable capacitance diode is varied, and it will regulate the APC oscillation frequency.

AFC CIRCUIT (AUTOMATIC FREQUENCY CONTROL)

When the fluctuation element of Δf_1 is larger, the regulation function of APC oscillator is sometimes out of control by the APC circuit alone. In order to widen the regulation function, the AFC circuit is installed.

The horizontal sync signal separated by a sync separator synchronizes a T-T oscillator oscillating with a sine wave of 15.625 kHz. By Tr8225 and L8207, the frequency fluctuation of this signal is converted to the amplitude fluctuation, and then it is recified in D8223 and converted to the direct current fluctuation. This signal is applied to a variable capacitance diode (D8217) which is the circuit components of the APC oscillator, is converted into capacity variation, thereby regulates the frequency of APC oscillator. In so doing, the circuit increases the range of the control for the fluctuating element. When the playback signal of 686 kHz decreases, a horizontal sync frequency (15.625 kHz) will decrease also. This difference of frequency is detected by the AFC circuit and the frequency level of the APC oscillator is decreased for compensation of the decreased 686 kHz playback signal.

PHASE COMPARATOR

Chrominance signal of 5.119 MHz $+\Delta f_1$ supplied to the base of TR8211 is limited by diodes (D8211—D8214), and after it is limited to a certain amplitude, only burst signal (5.119 MHz $+\Delta f_1$) is fed out by TR8211 and TR8212. Also, chrominance signal of 5.119 MHz $+\Delta f_2/4$ is to the secondary of T8205.

The advance and delay in phase of 2 signals are converted into plus and minus of voltage, and the deviation in phase is converted into voltage value.

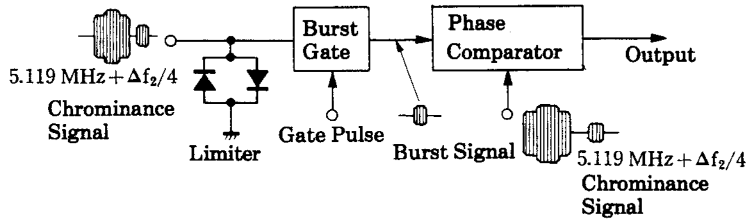

5.119 MHz + Δf₂/4
Chrominance Signal
Limiter
Burst Gate
Gate Pulse
Burst Signal
Phase Comparator
Output
5.119 MHz + Δf₂/4
Chrominance Signal

Fig. 25

CONTRUCTION OF IC8201 (M53273P)

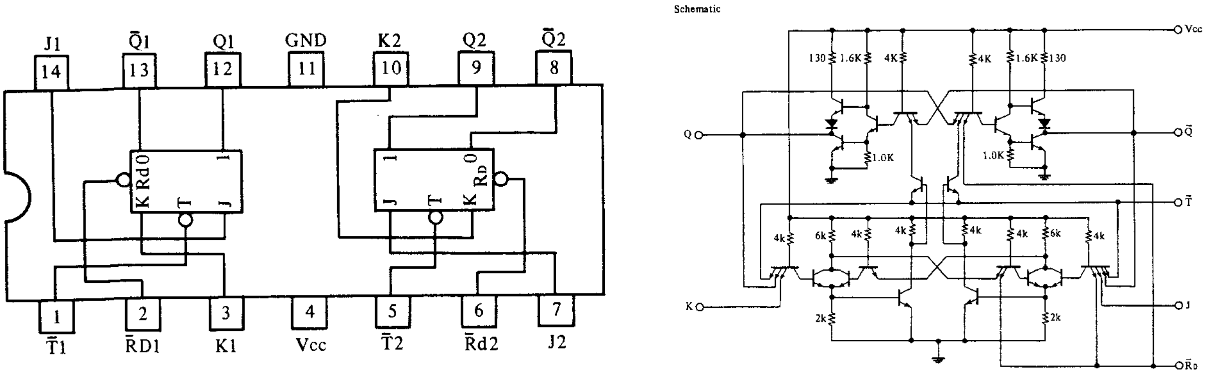

J1
Q̄1
Q1
GND
K2
Q2
Q̄2
14
13
12
11
10
9
8
1
2
3
4
5
6
7
T̄1
R̄D1
K1
Vcc
T̄2
R̄d2
J2
K
Rd0
T
J
1
Schematic
Vcc
Q
Q̄
T̄
K
J
R̄D
130
1.6K
4K
1.0K
6k
4k
2k

Fig. 26

Transport Control Circuit (VEP0630)

1. SELF HOLD CIRCUITS

These circuits controls PLAY, FF, REW, STOP, REC, and AUDIO DUB operations.
When the operation button is pressed, the self hold circuit memorizes its and control the VCR operation in accordance with the pressed operation button.
While one self hold circuit is operating, all other self hold circuits are given an inhibitive condition.

SELF HOLD CIRCUIT OPERATION (REFERRED TO AS SW1 SELF HOLD)

OPERATION	① SW1 OFF SW2 OFF	② SW1 ON	③ SW1 OFF	④ SW2 ON	⑤ SW2 OFF
SW1 SELF HOLD	Released	Operated	Operated	Released	Released
TR1	ON	OFF	OFF	ON	ON
TR2	OFF	ON	ON	OFF	OFF

[SW1 SELF HOLD]

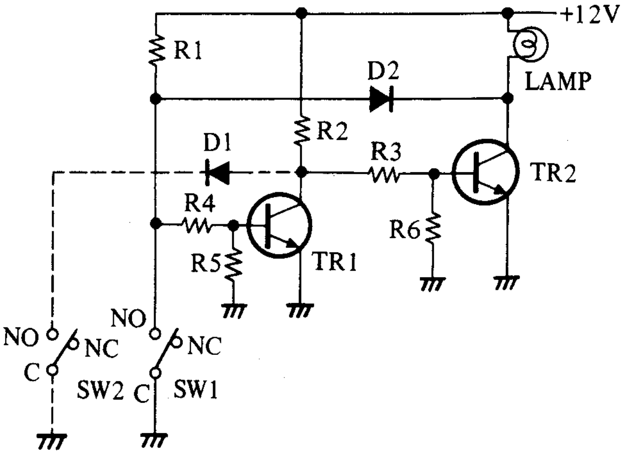

+12V
R1
D2
LAMP
D1
R2
R3
TR2
R4
R6
R5
TR1
NO
NC
NO
NC
C
SW2
C
SW1

Fig. 27

SW1 is an operating condition for SW1 SELF HOLD. Pressing the operation button causes SW1 to turn ON. When releasing the button to reset, SW1 turns OFF. But the operation of SW1 is kept by means of SW1 SELF HOLD circuit.
SW2 is an inhibitive condition for SW1 SELF HOLD; Pressing the operation button causes SW2 to turn ON. When releasing the button to reset, SW2 turns OFF. At this time the operation of the SW1 SELF HOLD is released since the inhibitive condition to SW2 ON is operated.

SW1 SELF HOLD OPERATION

1) SW1 OFF, SW2 OFF
   In the initial stage, both SW1 and SW2 are OFF.

   TR1 ON and TR2 OFF, SW1 SELF HOLD is released

2) SW1 OFF → ON, SW2 OFF
   When SW1 turns ON, voltage applied to TR1 base is grounded and TR1 turns OFF.
   As TR1 turns OFF, TR2 base is supplied with +12V divided by R2, R3 and R6, and TR2 turns ON and SW1 LAMP lights.

   TR1 OFF and TR2 ON, SW1 SELF HOLD operates

3) SW1 ON → OFF, SW2 OFF
   Because TR2 is kept ON even after SW1 has become OFF, voltage applied to TR1 base is grounded, through D2 and TR2, and TR1 turns OFF.

   TR1 OFF and TR2 ON, SW1 SELF HOLD operates

4) SW1 OFF, SW2 OFF → ON
   When SW2 turns ON, voltage applied to TR2 base is grounded through D1. TR2 turns OFF and SW1 LAMP goes out.
   As TR2 turns OFF, TR1 base is supplied with +12V divided by R1, R4 and R5, and TR1 turns ON.

   TR1 ON and TR2 OFF, SW1 SELF HOLD is released

5) SW1 OFF, SW2 ON → OFF
   Because TR1 is kept ON even after SW2 has become off, voltage applied to TR2 base is grounded through R2 and TR1, and TR2 turns off.

   TR1 ON and TR2 OFF, SW1 SELF HOLD is released

INHIBITIVE CONDITION & SELF HOLD OPERATION OF EACH PLAY, FF, REW, STOP

The following explains the INHIBITIVE CONDITION by taking PLAY SELF HOLD as an example. (┌- - -┐: common to all the circuits).

- * Setting PLAY SW to ON causes TR617 to turn off and TR619 to turn on so that PLAY SELF HOLD starts operating. Due to this operation, A2, A3 and A4 are at high.
- * When the FF, REW or STOP switches turns on, the high potential at A2, A3 and A4 are grounded. As the result, TR619 base turns off and PLAY SELF HOLD is released. At the same time, SELF HOLD of the switch turned on operates and this state is maintained until the other switch is turned on.

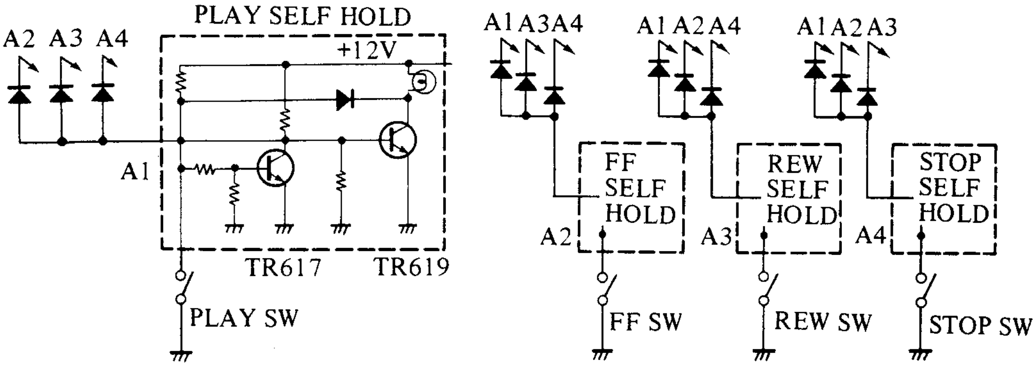


Fig. 28

IC601 (AN605) OPERATION

AN605 is semiconductor integration circuit comprising 5 schmidt trigger circuits with a differential amplifier and 1 DC amplifier circuit.
When more than +4V voltage is applied to INPUT, output voltage can be obtained.
If voltage applied to INPUT is less than +4V, the output is grounded through terminal ⑭.

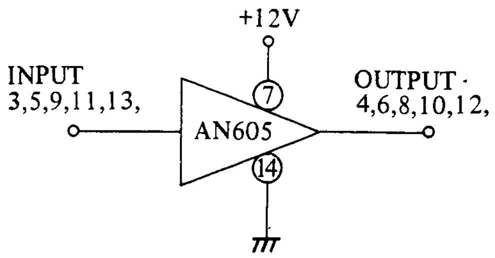


Fig. 29

(EQUIVALENT CIRCUIT)

IC601 (AN605) Schmidt trigger circuits with a differential amplifier

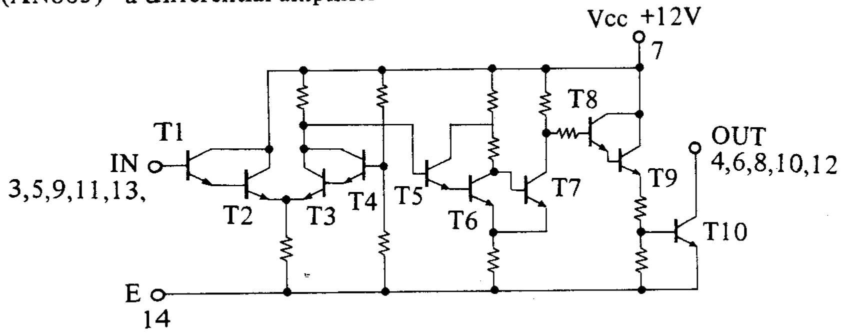


Fig. 30

D.C. Amp

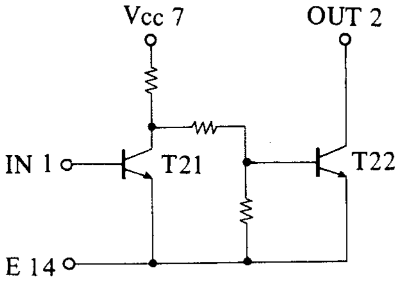


Fig. 31

2. AUTO PLAY OPERATION

Tape threading starts automatically when a cartridge tape is inserted.

After threading, the unit is placed in PLAY mode automatically.

INSERTING THE CARTRIDGE TAPE

When a cartridge tape is inserted, LOADING SW-A, LOADING SW-B and CARTRIDGE IN SW become ON.

LOADING SW-A ON
+12V is supplied from terminal (3) to AUTO PLAY and LOADING TIMER circuits.
LOADING SW-B ON
The supply brake solenoid and the takeup brake solenoid operate, the supply reel table brake and takeup reel table brake are released, simultaneously the AC motor starts rotating and loading starts.
CARTRIDGE IN SW ON
+12V is supplied to all the circuits.

AUTO PLAY

- * +12V supplied from terminal ③ goes through D606. Pulse made by C602 and R611 is supplied to TR604 base and, at this moment, TR604 turns ON.

- * As TR604 turns ON, TR617 turns OFF as well as PLAY SW ON, TR619 turns ON and PLAY SELF HOLD operates.

LOADING TIMER

- * +12V supplied from terminal ③ goes through R601 and R618 and charges C603.

While C603 is charged (for 6.4±1.6 sec.), loading operation is carried on.

- * After charge to C603 has completed, voltage is supplied through IC601 (5) to TR606 base and TR606 turns on.
  As TR606 turns ON, pressure roller, supply brake and takeup brake solenoids work for PLAY operation.
- * At this time, operation of the pressure roller solenoid mechanically releases LOADING SW-A and LOADING SW-B so that entire operation stops. Electric charge of C603 is discharged through R609, R601 and R615. As the result, TR605 turns on, voltage applied to TR606 base is grounded through R621, D607 and TR605. This STOP state continues while TR606 is OFF.

The PLAY operation is instantaneous. It is performed as TR606 turns ON, having nothing to do with PLAY SELF HOLD.

Time required for C603 to discharge is 0.1—0.3 sec. and during the time, the unit is in the STOP mode.

- * After discharge of C603, TR605 turns off and +12V is supplied through R621 and R622 to TR606 base. TR606 turns on.
  Pressure roller, supply brake and takeup brake solenoids work and PLAY begins.

In order that HIGH potential is applied to TR606 base, it is necessary that PLAY SELF HOLD works, TR618 is ON and TR620 is OFF.

PRESET FUNCTION

In such a case that any one FF, REW and STOP switches is turned on during loading, PLAY SELF HOLD is released and SELF HOLD of the switch set to ON operates. Due to the operation of this SELF HOLD, the unit is placed in one of FF, REW and STOP after discharge of C603.

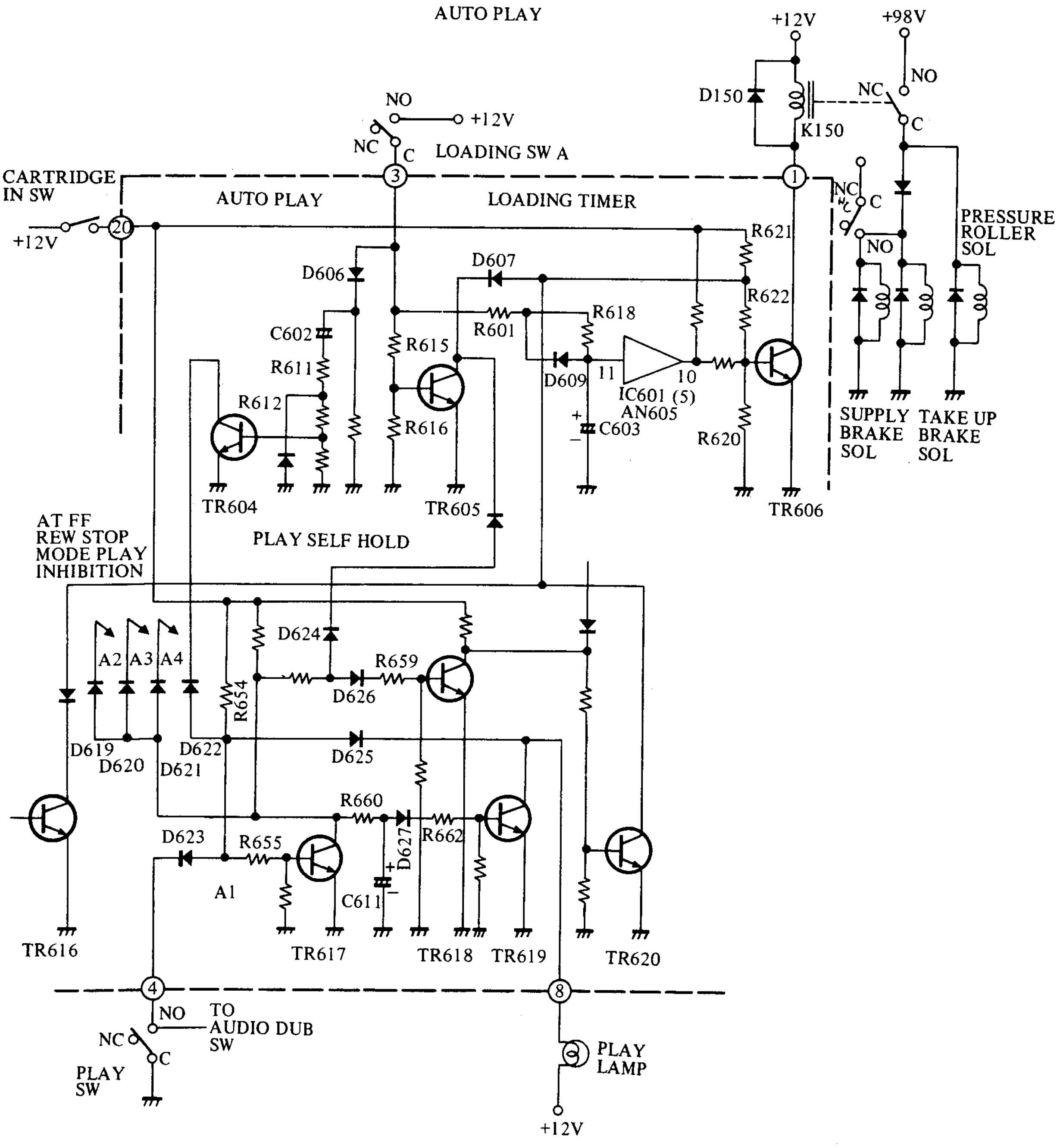

AUTO PLAY
+12V
+98V
NO
NC
C
D150
K150
NO
+12V
NC
C
LOADING SW A
CARTRIDGE IN SW
3
1
20
+12V
AUTO PLAY
LOADING TIMER
R621
PRESSURE ROLLER SOL
D606
D607
R622
C602
R618
R601
R611
R615
R612
D609
11
10
IC601 (5) AN605
C603
R616
R620
SUPPLY BRAKE SOL
TAKE UP BRAKE SOL
TR604
TR605
TR606
AT FF REW STOP MODE PLAY INHIBITION
PLAY SELF HOLD
A2
A3
A4
D624
R659
R654
D626
D619
D620
D622
D621
D625
R660
D623
R655
D627
R662
C611
A1
TR616
TR617
TR618
TR619
TR620
4
8
NO
NC
C
TO AUDIO DUB SW
PLAY SW
PLAY LAMP
+12V

Fig. 32

3. AUTO REW, REW, AUTO EJECT OPERATION

When the cartridge tape comes to its end (trailer tape, translucent tape portion) during PLAY or FF, the tape is rewound automatically. After rewind, the cartridge is ejected automatically.

(In case that CDS LAMP is broken, AUTO REW and AUTO EJECT follow automatically.)

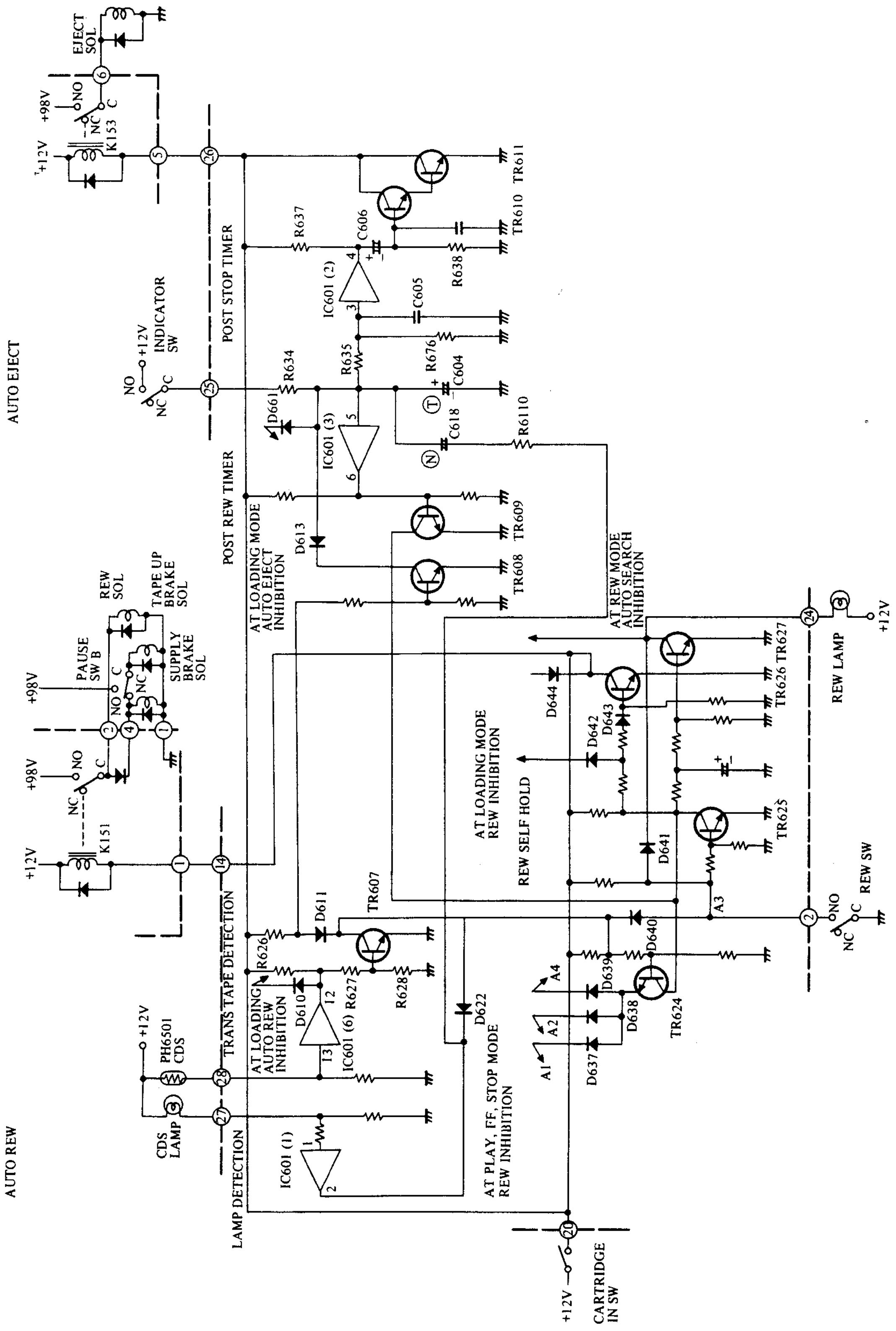

AUTO EJECT
AUTO REW
EJECT SOL
+12V
+98V
NO
NC
C
K153
K151
INDICATOR SW
POST STOP TIMER
POST REW TIMER
R637
R638
R634
R635
R676
R6110
C606
C605
C604
C618
IC601 (2)
IC601 (3)
IC601 (6)
IC601 (1)
D661
D613
D611
D610
D622
TR610
TR611
TR608
TR609
TR607
R626
R627
R628
AT LOADING MODE AUTO EJECT INHIBITION
AT REW MODE AUTO SEARCH INHIBITION
REW SOL
TAPE UP BRAKE SOL
PAUSE SW B
SUPPLY BRAKE SOL
AT LOADING MODE REW INHIBITION
REW SELF HOLD
D644
D643
D642
D641
D640
D639
D638
D637
TR626
TR627
TR625
TR624
A1
A2
A3
A4
REW LAMP
REW SW
TRANS TAPE DETECTION
LAMP DETECTION
AT LOADING AUTO REW INHIBITION
PH6501 CDS
CDS LAMP
AT PLAY, FF, STOP MODE REW INHIBITION
CARTRIDGE IN SW
T
N

Fig. 33

AUTO REW

- While a video tape portion is running (in PLAY, FF or REW mode), +12V supplied from CARTRIDGE IN SW is grounded at IC601-6 through R626, and TR607 base is off.
- Translucent Tape Detection:

  When the translucent tape is detected, the resistance of CDS decreases and the output voltage is fed out from IC601-6.

  At this time, +12V is divided by R626, R627 and R628 and supplied to TR607 base, which turns on.

  While light is not cast upon CDS (in video tape portion), the resistance of CDS is high and the voltage applied to IC601-6 terminal (13) is lower than +4V.

  When light is cast upon CDS (in translucent tape portion), the resistance of CDS is low, voltage higher than +4V is applied to IC601-6 terminal (13) and the output can be obtained at terminal (12).

TR607 ON

In the same condition as for REW SW ON, TR625 turns off, TR627 turns on, REW SELF HOLD operates.

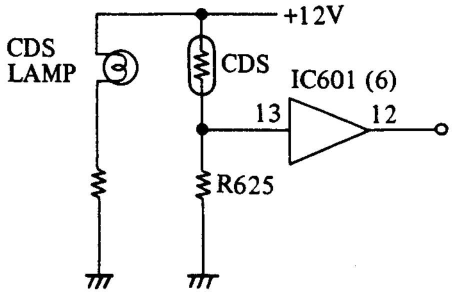


Fig. 34

- Due to the REW SELF HOLD, TR626 turns on and REW operation begins.

TR626 ON

REW, supply brake and takeup brake solenoids start operating.

REW

- While the translucent tape is detected, TR607 is on, REW SELF HOLD operates to place the unit in the REW mode. Because at this time voltage applied to TR624 base is grounded through TR607, TR624 turns OFF.

TR624 ON

All modes except REW are inhibited.

- In case that CDS LAMP is defective, IC601-1 terminal (2) is grounded, and voltages applied to TR625 base and TR624 base are grounded through D622, so that TR625 and TR624 turn off.

TR625 OFF

REW SELF HOLD operates and REW operation begins.

TR624 OFF

All modes except REW are inhibited.

AUTO EJECT (POST REW TIMER, POST STOP TIMER)

- While the tape is rewound, INDICATOR SW turns on just before the video tape portion changes into the leader tape (translucent tape) portion.

INDICATOR SW ON

+12V is applied to terminal ㉕, but at this time, the +12V is grounded through D613 and TR608.

- When the leader tape (translucent tape) is detected, TR607 turns on and TR608 base OFF, so that +12V supplied from INDICATOR SW is charged to C604.

CHARGING TO C604

The tape is rewound for 1.5—3 sec. until rewound into the cartridge container completely.

- After charging of C604, the voltage is supplied to Tr609 base and TR609 turns on.

TR609 ON

REW SELF HOLD is released and REW is inhibited. In this state, the unit is in the STOP mode.

- After charging to C604, voltage is applied to IC601-2 with delay for 1—2.5 sec. due to time constant of R635 and R636. Pulse made by C606 and R638 is supplied to TR610 and, at this moment, TR610 and TR611 turn on.
  C605 and C606 are used to prevent EJECT solenoid from operating erroneously.
- In case CDS LAMP is defective, C618 is connected in parallel with C604. Time from INDICATOR SW ON up to INHIBITION of REW is determined depending on the time of charging to C604 and C618.
  Time from INHIBITION of REW up to EJECT is regular.

TR610 and TR611 ON
EJECT solenoid moves to eject the cartridge tape.

While charging to C618 the tape is rewound for 3—5 seconds until it is rewound into the cartridge container completely.

4. AUTO SEARCH OPERATION

When the needle of the tape indicator reaches to the preset point of the AUTO SEARCH SW during FF, PLAY operation begins.

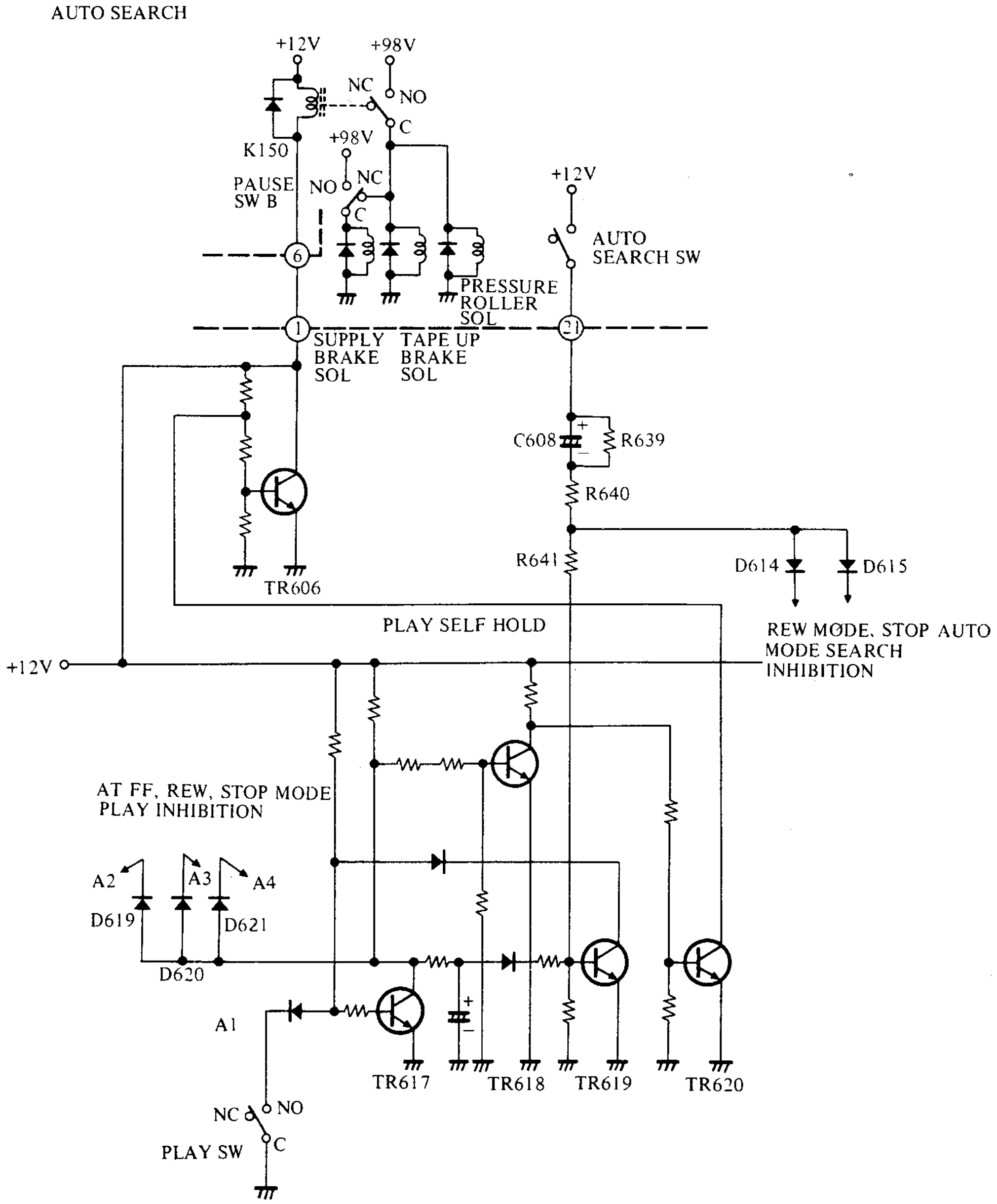

AUTO SEARCH
+12V
+98V
NC
NO
C
K150
+98V
PAUSE SW B
NO
NC
C
6
+12V
AUTO SEARCH SW
PRESSURE ROLLER SOL
1
21
SUPPLY BRAKE SOL
TAPE UP BRAKE SOL
C608
R639
R640
R641
D614
D615
TR606
REW MODE, STOP MODE
AUTO SEARCH INHIBITION
PLAY SELF HOLD
+12V
AT FF, REW, STOP MODE PLAY INHIBITION
A2
A3
A4
D619
D621
D620
A1
TR617
TR618
TR619
TR620
NC
NO
C
PLAY SW

Fig. 35

AUTO SEARCH SW

When the needle of the tape indicator reaches to the preset point of the AUTO SEARCH SW, the AUTO SEARCH SW turns on.

AUTO SEARCH SW ON
+12V is applied to C608 and R639.
By this pulse, TR619 immediately turns on.

PLAY SELF HOLD

As TR619 turns ON, TR617 turns off and PLAY SELF HOLD begins operating. Due to this operation, TR618 turns on, TR620 turns off and TR606 turns on.

TR606 ON
Pressure roller, supply brake and takeup brake solenoids work and PLAY begins.

* In such a case that AUTO SEARCH SW turns on while either REW SELF HOLD or STOP SELF HOLD is operating (during REW or STOP), the pulse is grounded through D614 or D615 so that no PLAY operation occurs.

5. PAUSE OPERATION

MODE	PAUSE BUTTON ON	PAUSE BUTTON ON → OFF
PLAY	Tape stops running. (STILL picture)	PLAY continues.
RECORDING	Tape stops running. (Direct TV picture)	RECORDING continues.
AUDIO DUB	Tape stops running. (STILL picture)	PLAY continues.

The following explains by taking PLAY mode as example.

* As PAUSE button is depressed, PAUSE SW-A turns OFF and PAUSE SW-B changes.

PAUSE SW-A OFF
TR616 turns on. Voltage supplied to TR606 base is grounded through D618 and TR616 and TR606 turns off. As TR606 turns off, the pressure roller, supply brake and takeup brake solenoids are released and the tape stops running.
(At this time, PLAY operation continues because no inhibitive condition is applied to PLAY SELF HOLD.)

PAUSE SW-B CHANGE
As PAUSE SW-B changes, the takeup brake solenoid works and the takeup reel table brake is released.
(Due to this operation, the tape is kept from loosening so that stable still picture can be obtained.)

* As PAUSE button is released, PAUSE SW-A turns on and PAUSE SW-B changes.
This operation causes PLAY to restart.

PAUSE SW-A ON
TR616 turns off, TR606 turns on, and the pressure roller and takeup brake solenoids work.

PAUSE SW-B CHANGE
As PAUSE SW-B changes, +98V is applied to the supply brake solenoid and the supply reel table brake is released.

* When PAUSE button is depressed while FF, REW or STOP SELFHOLD is working:

PAUSE SW-A
Because voltage applied to TR616 base is grounded from A2, A3 or A4, TR616 turns off.

PAUSE SW-B
Though PAUSE SW-B is changed over, FF SOLENOID SW causes the supply brake solenoid to operate during FF or REW.

- * When PAUSE button is depressed during RECORDING operation:

  Not PLAY SELF HOLD but also RECORDING SELF HOLD continues to operate. Then, when PAUSE button is released, RECORDING operation continues.
- * When PAUSE button depressed during AUDIO DUB operation:

  Because TR606 turns off, AUDIO DUB SELF HOLD is released. Operation when PAUSE button is released is PLAY operation.

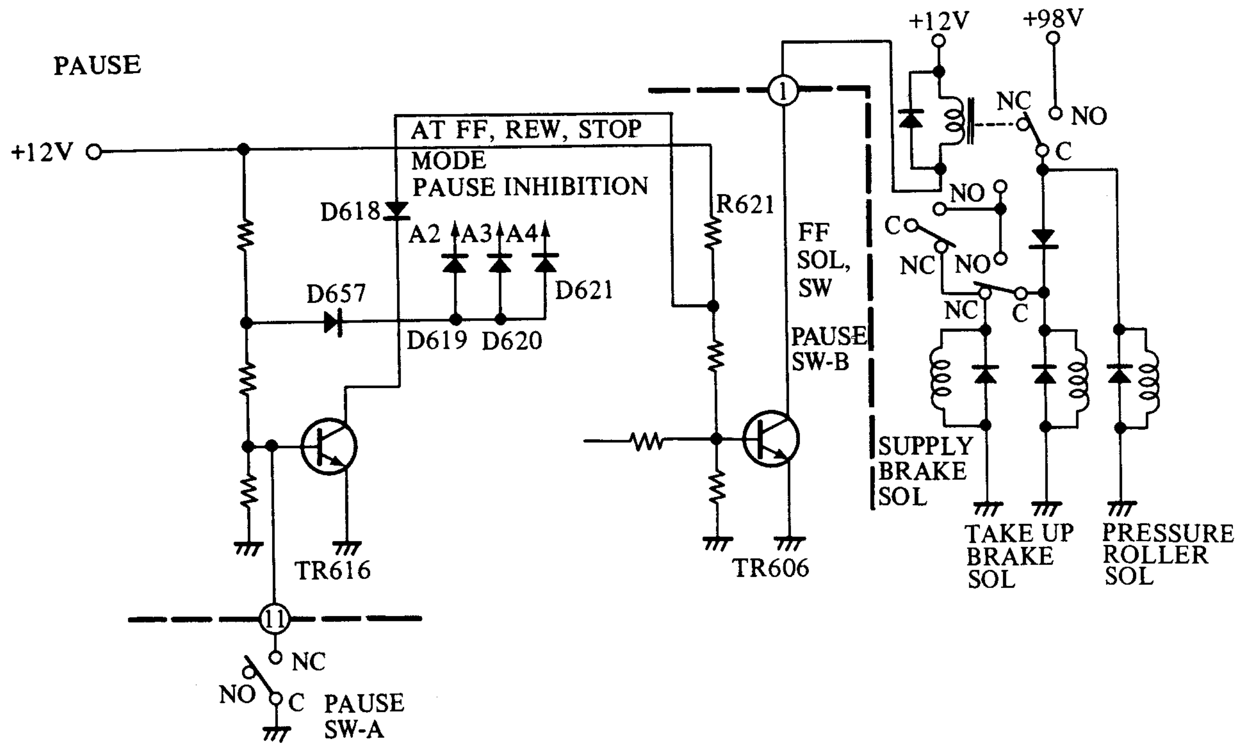

PAUSE
+12V
+98V
AT FF, REW, STOP MODE
PAUSE INHIBITION
D618
A2
A3
A4
D657
D621
D619
D620
R621
1
FF SOL, SW
PAUSE SW-B
NC
NO
C
SUPPLY BRAKE SOL
TAKE UP BRAKE SOL
PRESSURE ROLLER SOL
TR616
TR606
11
NC
NO
C
PAUSE SW-A

Fig. 36

6. STOP SELF HOLD, REC SET OPERATION

STOP SELF HOLD

When STOP SW is on, STOP SELF HOLD operates, TR630 turns off and TR631 turns on.

STOP SW ON
TR632 is OFF.

When STOP SW turns off, STOP SELF HOLD is maintained, TR630 is OFF and TR631 is ON.

STOP SW OFF
TR632 is ON.

- * As TR631 and TR632 turn on, one operating condition of REC SELF HOLD is satisfied. Setting REC SW to on, that is another operating condition, causes REC SELF HOLD to operate.

REC SET

As PLAY SW is ON, PLAY SELF HOLD works and TR619 turns on, so that one operation condition of RECORDING SELF HOLD is satisfied.
Another operating condition is REC SET operation, and when TR613 turns on, this condition is satisfied.

To turn TR613 on, the necessary condition is that PLAY SW turns ON and TR612 is OFF. In order to ground TR613 emitter it is required that REC SW is ON.

* Setting both PLAY SW and REC SW to ON causes RECORDING SELF HOLD to operate.

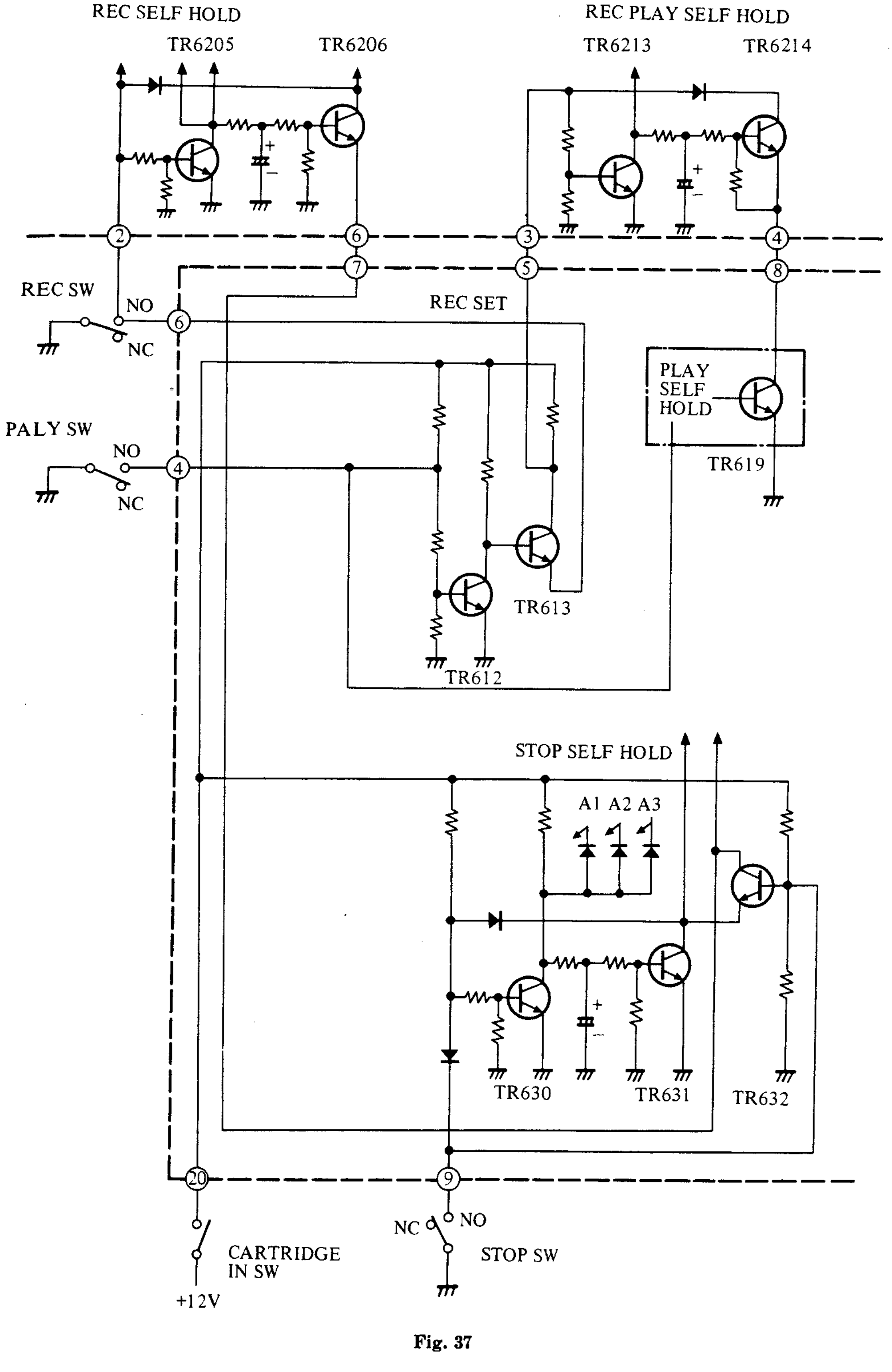

REC SELF HOLD
TR6205
TR6206
REC PLAY SELF HOLD
TR6213
TR6214
2
6
3
4
7
5
8
REC SW
NO
NC
6
REC SET
PLAY SELF HOLD
TR619
PALY SW
NO
NC
4
TR613
TR612
STOP SELF HOLD
A1 A2 A3
TR630
TR631
TR632
20
9
CARTRIDGE IN SW
+12V
NC
NO
STOP SW

Fig. 37

7. STOP TIMER OPERATION

Pressing FF button during PLAY makes the unit stop a moment and then the unit is placed in FF mode. Such a stop operation during a changeover from or to PLAY, FF and REW is performed by this circuit.
The following explains by taking an example in pressing FF button during PLAY operation.

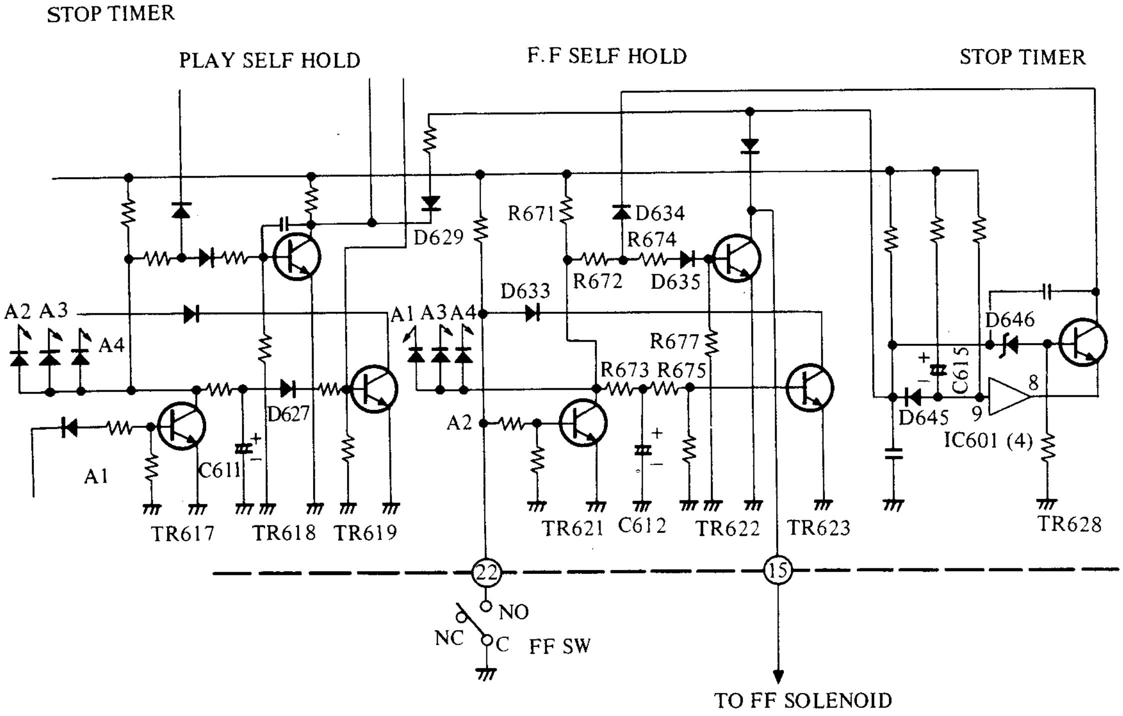

STOP TIMER
PLAY SELF HOLD
F.F SELF HOLD
STOP TIMER
R671
D634
R674
D629
D633
R672
D635
A2 A3
A4
A1 A3 A4
D646
R677
R673 R675
C615
D627
D645
9
8
IC601 (4)
A1
C611
A2
C612
TR617
TR618
TR619
TR621
TR622
TR623
TR628
22
15
NO
NC
C
FF SW
TO FF SOLENOID

Fig. 38

PLAY SELF HOLD

During PLAY operation, PLAY SELF HOLD is operating when FF SW (FF button) turns on, an inhibitive condition is applied to PLAY SELF HOLD, thereby releasing the PLAY SELF HOLD mode.

FF SELF HOLD

When FF SW turns on, an operating condition is applied to FF SELF HOLD, and TR621 turns off. At this time, voltage applied to TR622 base is charged to C612 and, in an instant, TR623 turns off.
At the moment when TR623 turns off, TR622 also turns off so that no FF operation occurs.

STOP TIMER

For an instant that TR618 and TR622 are off, D645 of the cathode side is open. At this time, +6V or higher voltage is applied to the cathode side of zener diode D646 and D646 energizes so that TR628 turns on.
Charging to C612 finishes in an instant, but TR628 turns on and voltage applied to TR622 base is grounded through D634 and TR628, so that TR622 turns off.
At the same time, TR618 and TR622 turn off. Electric charge of C615 made during PLAY starts discharge since the cathode side of D645 has become open and is supplied to IC601-4 (9) terminal. When this voltage becomes +4V or more, output voltage is fed out at

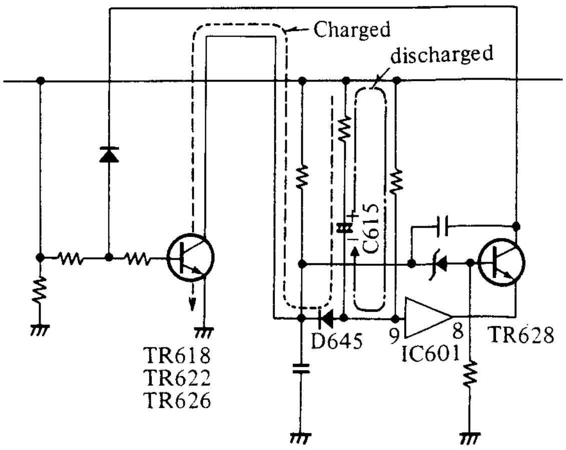

Charged
discharged
C615
D645
9
8
IC601
TR628
TR618
TR622
TR626

Fig. 39

terminal (8), TR628 emitter becomes open and TR628 collector becomes high potential, so that the voltage divided by R671, R672, R674 and R677 is applied to TR622 base, and TR622 turns on.

When TR622 turns ON, FF operation begins. Time of STOP TIMER is about 1 second.

Recording Control Circuit (VEP00146A)

1. DUBBING HOLD CIRCUIT

When DUB. SW becomes ON and pressure roller relay becomes ON, dubbing hold circuit operates. The emitter of TR6202 becomes ground position, TR6202 becomes ON. Therefore, +12V is supplied to P6515 terminal (1) from the emitter of TR6204. And P6515 terminal (1) (DUB LAMP) becomes ground position and DUB LAMP lights.

2. REC. HOLD CIRCUIT

When Rec. SW becomes ON while STOP SELF HOLD is operating, Rec. hold circuit operates. The emitter of TR6206 becomes ground position, TR6206 becomes ON, therefore, TR6207 and TR6209 becomes OFF, TR6208 and TR6210 becomes ON. Then, +12V is supplied to P6515 terminal (1) from the emitter of TR6208. And, +12V is supplied to P6518 terminal (5) from the emitter of TR6210, too.

3. REC. PLAY HOLD CIRCUIT

When Rec. hold circuit operates, TR6205 becomes OFF. And, P6518 terminal (3) becomes ground position. Therefore, TR6213 becomes OFF, TR6214 becomes ON. Then, TR6217 becomes ON, +12V is supplied to P6516 terminal (5) from the emitter of TR6217. And P6516 terminal (4) (PLAY LAMP) becomes ground position, therefore, PLAY LAMP lights.

Sub-Transport Control Circuit (VEP0634A)

This circuit has 3 functions, Muting, Automatic Repetition and Skew Solenoid Release.

1. MUTING CIRCUIT (TR6301—TR6303)

This circuit is used to prevent both video and audio from appearing on the monitor while the LOADING operation, fast forward, rewind and stop.

When the PLAY button is pressed, the mono-stable multivibrator (Tr6301 and Tr6302) operates, and only for about 3 seconds determined by CR (C6302 and R6303), D6302 is supplied with voltage and Tr6303 turns on, thereby the unit is placed in the MUTING mode.

During FF, REW or at STOP, voltage is supplied from P6546 terminal (6) (Play Lamp +12V) and, through D6303, Tr6303 turns on, thereby the unit is placed in the MUTING mode.

During LOADING, voltage is supplied from P6546 terminal (5) (Loading +12V) and, through D6304, Tr6303 turns on, thereby the unit is placed in the MUTING mode.

At the end of LOADING, the mono-stable multivibrator and the unit is placed in the MUTING mode for about 3 seconds like in the case of PLAY.

In the case of E-E mode, voltage is supplied through D6305 to P6546 terminal (2) (Record Lamp) so that Tr6303 turns off and no MUTING mode results.

2. AUTOMATIC REPETITION CIRCUIT (TR6304—TR6306)

This circuit performs automatic repetition.

As the indicator switch is turned on, voltage (+12V) is supplied from P6547 terminal (3) (Ind. SW), and going through the differentiation circuit, it is fed to Tr6304. As the result, Tr6304 turns on, voltage of play switch is fed from P6547 terminal (4) (Play SW), goes through D6308 and Tr6304, and grounded.

The play switch is turned on and the unit is placed in the PLAY mode. Next, voltage from P6547 terminal (1) (Search SW) is supplied to Tr6306 and the rewind switch turns on like in the case of the indicator switch.

This circuit changes PLAY into REW mode only, and any change from other mode is inhibited by Tr6305. In other words, since Tr6305 is ON in other mode than PLAY, voltage from the search switch is grounded via Tr6305 and Tr6305 turns off so that the unit is not placed in REW mode. In the case of RECORDING, +24V is supplied from P6547 terminal (5), and going through R6318, it is fed to Tr6305, so that Tr6305 turns on and the unit is not placed in REW mode.

3. SKEW SOLENOID RELEASE CIRCUIT (TR6307—TR6309)

This circuit operates in REC mode. In REC mode, +24V is supplied from P6547 terminal (5) to the base of Tr6307; Tr6307 and Tr6308 instantly turns on and the collector voltage of Tr6308 becomes zero. No voltage is applied to P6547 terminal (6), and the skew solenoid operates. Tr6309 is a circuit to keep the skew solenoid on.

Solenoid Drive Circuit (VEP0047A)

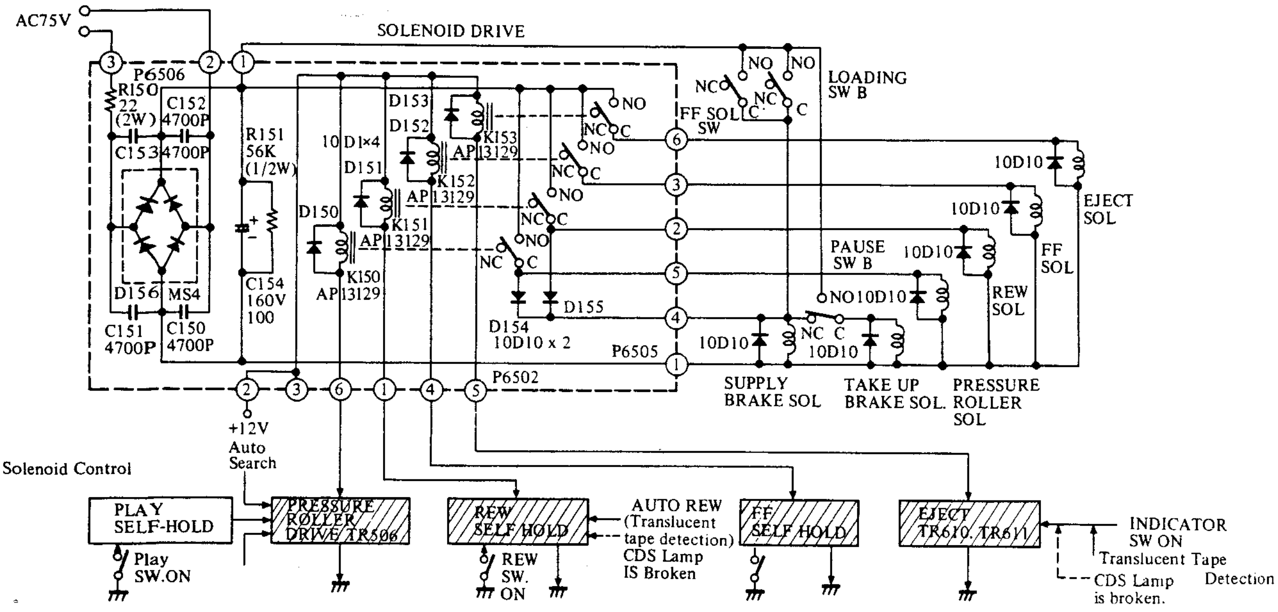

AC75V
SOLENOID DRIVE
P6506
R150
22
(2W)
C152
4700P
C153
4700P
D156
MS4
C151
4700P
C150
4700P
R151
56K
(1/2W)
C154
160V
100
10
D1×4
D150
D151
D152
D153
K150
AP13129
K151
AP13129
K152
AP13129
K153
AP13129
NO
NC
C
D154
10D10 x 2
D155
P6505
LOADING
SW B
FF SOL
SW
PAUSE
SW B
10D10
EJECT
SOL
FF
SOL
REW
SOL
SUPPLY
BRAKE SOL
TAKE UP
BRAKE SOL.
PRESSURE
ROLLER
SOL
P6502
+12V
Auto
Search
Solenoid Control
PLAY
SELF-HOLD
Play
SW.ON
PRESSURE
ROLLER
DRIVE TR506
REW
SELF HOLD
REW
SW.
ON
AUTO REW
(Translucent
tape detection)
CDS Lamp
IS Broken
FF
SELF HOLD
EJECT
TR610, TR611
INDICATOR
SW ON
Translucent Tape
CDS Lamp
is broken.
Detection

Fig. 40

- * The rectifier circuit comprising D156 and C150—C153 produces +98 V to be supplied to solenoids.
- * The circuit enclosed in ▨ (included in the transport control circuit) operates when any one of operating conditions is applied to it.

When the circuit enclosed in ▨ operates, current is supplied to turn releays K150—153 on and then +98 V is supplied to each solenoid.

Timing Circuit

This Timing Circuit performs the following functions.

1. It controls the timing for recording while in the EDIT mode so that recording begins and ends during vertical blanking interval.
2. It controls erase timing and provides erase current.

Timing for Recording While in EDIT Mode.

The head switching pulse (T-2) from terminal (6) of J6528 enters TR6610 and is differentiated by C6610 and R6631 (T-3). The negative pulses are sent to the base of TR6611 through D6607. Normally +12 V is not supplied from the delay (A) circuit, therefore the negative pulses applied to the base have no effect at the collector. However, after the EDIT button is applied to the collector and base through R6632 and R6633 each, turning TR6211 ON. Thus the collector remains Low. Now when the negative pulses are applied to the base, they appear as positive pulses at the collector (T-5). These positive pulses are applied to the base of TR6613 which serves as the SET input of a SET-RESET flip-flop formed by TR6613 and TR6614. Thus the first positive pulse set the flip-flop and a High output appears at TP63 (T-6). The subsequent positive pulses continue to keep the flip-flop in the SET state and are functionally not needed. When the EDIT button is released, the TR6613-TR6614 flip-flop must be reset. This occurs in the following manner. The head switching pulse from TR6610 is also applied to another differentiator consisting of C6613, R6635 and R6637. The same +12V which enabled TR6611 during EDIT was also applied to TR6612, turning in ON. This grounds the differentiated output at R6637 during EDIT. When the EDIT button is released, TR6612 is shut off and the differentiated pulses (T-7) are applied to the RESET input (base of TR6614) of the TR6613-TR6614 flip-flop. The next positive going pulse after releasing the EDIT button will reset the flip-flop and the output at TP63 will go Low (T-6). Since +12 V is no longer applied to TR6612, no more SET pulses can be sent to the flip-flop without pushing the EDIT button. Thus the flip-flop output goes High on the first negative transition of the head switching pulse after the EDIT button is pushed, and goes Low on the first positive transition of the head switching pulse after the EDIT button is released. The output of the flip-flop at TP63 controls the duration of recording and erasing during Editing. However, since the flying erase head is actually erasing two fields at once, recording must continue for one extra field past erase. Otherwise there will be one blank field at the end of an Insert Edit. This extra field of recording is accomplished in the following manner. The complimentary output of the flip-flop at the collector of TR6613 (T-8) is differentiated by C6616 and R6651 (T-9). The positive going pulse (end of flip-flop High state) fires a monstable multivibrator consisting of TR6617 and TR6618. Its output duration is greater than one field and less than two fields. The output, taken at TP65 (T-10) is Low during the active state. This shuts off TR6616 (T-11) and allows the head switching pulse from R6691 to pass to D6610. The timing relationships have been so designed that the head switching pulse is always positive for this field. Diodes D6608 and D6610 from an OR gate whose output is positive for the duration that TR6614 is positive plus one extra field, because the head switching pulse is positive for that field. The polarity is reversed by TR6615 (T-12).

Erase Timing

TR6623 is a 4.2 MHz oscillator whose output is amplified by TR6625—TR6628 before being sent to the Flying Erase head. The Flying Erase head only functions during the EDIT mode. This is accomplished by grounding the oscillator output through TR6624 except when an EDIT recording is taking place. The output of the SET-RESET flip-flop at the collector of TR6613 is sent through D6615 to the base of TR6624. This turns TR6624 on at all times except during an EDIT recording. Because the Flying Erase head is erasing two fields at once, it is physincally larger than a conventional record head and would erase a portion of the audio track if it remained on continuously during EDIT. To prevent this, the signal to the Flying Erase head is held off each revolution until it reaches the video portion of the tape. This amounts to turning on the Flying Erase head about 3 milliseconds before head switching, because the Flying Erase head is physically placed ahead of the record head by about 35°.

The signal to the Flying Erase head is controlled in the following manner. Differentiated positive head switching pulses from D6613 trigger a monostable multivibrator formed by TR6621 and TR6622. The High output at TP66 turns on TR6624 which grounds the output of the oscillator. If the monostable multivibrator duration (adjustable with R6666: Refer to page 4-10, 5) is set to 13.6 milliseconds, the Flying Erase head will be active for the final 3 milliseconds of that field pulse the entire next field, since D6613 will allow only positive head switching pulses to trigger the monostable multivibrator.

TR6619 and TR6620 are DC converter for tracking meter.

TR6601—TR6609 are EDIT delay circuit.

TIMING CHART

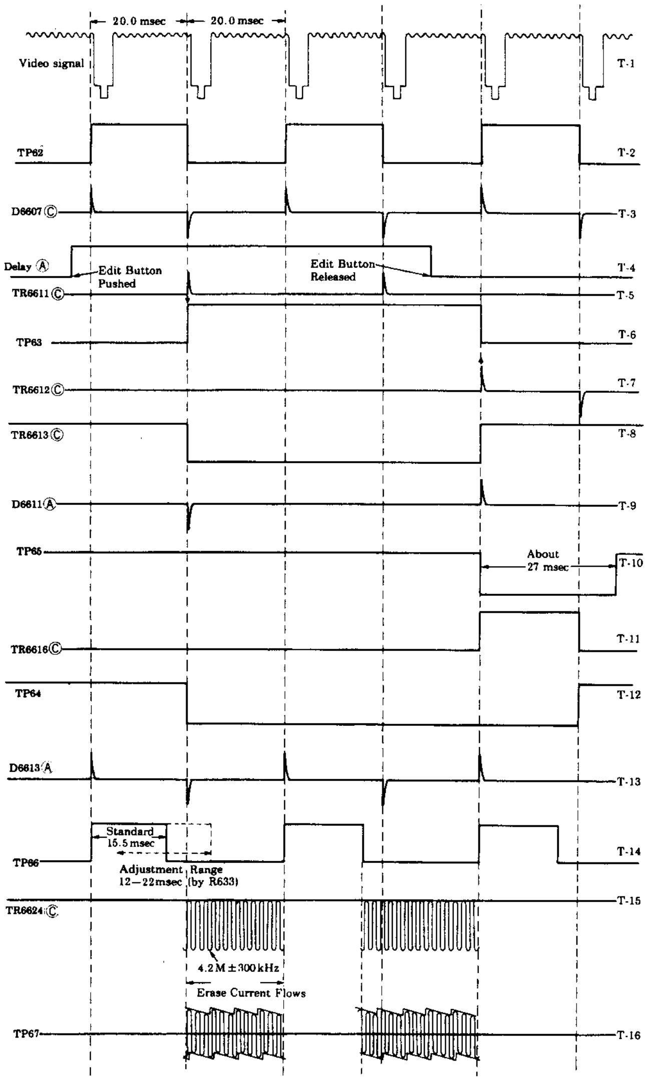

20.0 msec
20.0 msec
Video signal
T-1
TP62
T-2
D6607©
T-3
Delay Ⓐ
Edit Button Pushed
Edit Button Released
T-4
TR6611©
T-5
TP63
T-6
TR6612©
T-7
TR6613©
T-8
D6611Ⓐ
T-9
TP65
About 27 msec
T-10
TR6616©
T-11
TP64
T-12
D6613Ⓐ
T-13
Standard 15.5 msec
Adjustment Range 12—22msec (by R633)
TP66
T-14
TR6624©
T-15
4.2M±300kHz
Erase Current Flows
TP67
T-16

Fig. 41

Electronic Editing

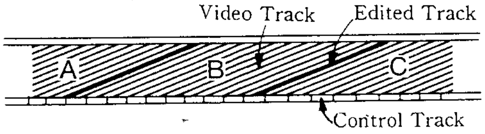
The 1/2″ VCR is a herical scanning system unlike the broadcasting VTR, then it is impossible to make a tape splice editing like the audio tape because the video track is long and slant.
Therefore, to obtain the complete editing picture, the herical scanning system VCR requires as following condition.

(1) New signal must be recorded along the already recorded track.
(2) Sync signal of recorded video signal and edited video signal must be consecutive.
(3) The erase head is fixed at a right angle against the tape running direction so that the erase circuit and the recording circuit must be operated at the proper timing.

ASSEMBLE EDITING AND INSERT EDITING

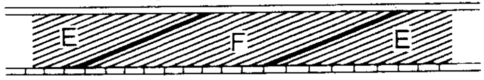
The magnetic track patterns made by assemble editing and insert editing are shown in Fig. 42.
Assemble editing as shown in Fig. 42 (a) is used to edit the different video signal A, B, C, ... in turn. In this case, control signal is recorded at the same time as video signal is recorded. The other hand, insert editing is used for editing to insert F into the portion of E. In this case, F portion is recorded on the previously recorded E portion after erasing the part of E video track. However, control track is not erased when the F portion is recorded.

a) Assemble Editing



The each control signal of A, B, C portion is recorded when each A, B, C portion is recorded.

b) Insert Editing



The control signal of F portion is the signal record when the E portion has been recorded.

Fig. 42 Electronic Editing Tape Format

ELECTRICAL ADJUSTMENT PROCEDURES

TEST EQUIPMENT

1. VTVM (vacuum tube volt meter)
   Voltage Range: 0.005—50V/DIV (DC)
2. Dual Trace Oscilloscope
   Frequency Range: 0—15MHz (5MHz; 0dB, 10MHz; −3dB)
   Voltage Range: 0.005—5V
   Probe: 10:1
3. Frequency Counter
   Frequency Range: 0—10MHz
4. Signal Generator
   (Monoscope Test Pattern/PAL Colour Bar)
   Frequency Range: 100kHz—6MHz
   Output Voltage: 0.01—3V
5. Reference Test Tape
   VFM5180E
6. Sweep Generator
7. Colour Monitor TV
8. Plastic Tip Driver
9. 10Ω Resistor

Power Supply Circuit

1. +12V Power Source Adjustment

- * Test Point: TP101
- * Adjustment Point: R106

1. Supply AC power to the unit and push only the Rec. button.
2. Connect a DC voltmeter to TP101.
3. Adjust R106 for 12.0V±0.1V.

2. −12V Power Source Adjustment

- * Test Point: TP103
- * Adjustment Point: R113

1. Supply AC power to the unit and push only the Rec. button.
2. Connect a DC voltmeter to TP103.
3. Adjust R113 for −12V±0.2V.

3. −16V Power Source Confirmation

- * Check Point: TP102

1. Supply AC power to the unit and push only the Rec. button.
2. Connect a DC voltmeter to TP102.
3. Make sure that the voltage of TP102 is −16V±1.0V.

4. Plunger Power Source Confirmation

- * Check Point: Both ends of coil of pressure roller solenoid.

1. Connect the DC voltmeter to both ends of coil of pressure roller solenoid. (Wire of pink is (+), other side is (−).)
2. Supply AC power to the unit and place the unit in Play mode.
3. Make sure that the indicator of voltmeter becomes 98V±5V.

Transport Control Circuit

1. Threading Time Adjustment

- * Adjustment Point: R6112

1. Adjust R6112 so that it takes 8.5 seconds from when the cartridge tape is pushed in until the unit is placed in Play mode. When the unit is in Play mode, the PLAY indicator lamp lights.

2. Eject Time Confirmation

1. Place the unit in REW mode.
2. Confirm the time from when the end of video tape turns into the leader tape to when the unit becomes stop mode, and the time from when the unit becomes stop mode to when the eject solenoid works, the end of video tape—(2—0.5sec.)—Stop—(1—2sec.)—Eject.

3. Interval of Operation

1. Confirm the interval, when the mode is exchanged by the operation switch button.
   a) Stop—(0sec.)—other mode.
   b) Play—(0.5—1.5sec.)—F.F., Rew.
   c) F.F.—(0.8—2.0sec.)—Play, Rew.
   d) Rew.—(0.8—2.0sec.)—Play, F.F.
   e) Each mode—(0sec.)—Stop.

4. Miss-Threading Confirmation

1. Insert the empty cartridge tape container, and place the unit in provisional miss-threading condition.
2. At this time, make sure that the unit becomes Rew. mode, and the cartridge is ejected.

Control Circuit

HEAD SERVO

1. Output P.G. Coil

- * Test Point: Both ends of P.G. Coil

1. Place the unit in Recording/Play mode.
2. Connect an oscilloscope to both ends of P.G. coil.
3. Make sure that the output of both ends of P.G. coil becomes 0.15Vp-p or more as shown in Fig. 1.

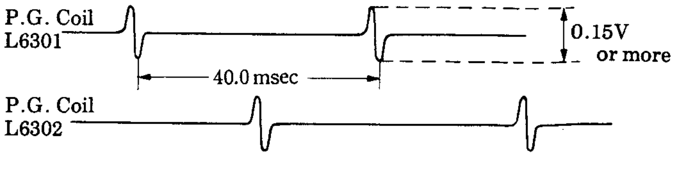


Fig. 1

2. **Muting**
   - * Test Point: M11
   1. Place the unit in Rewind mode, Fast Forward mode or Stop mode.
   2. Connect an oscilloscope to M11.
   3. Make sure at this time the voltage of M11 becomes +12V.

3. **Trapezoid Waveform**
   - * Test Point: TP25
   1. Place the unit in Recording/Play mode.
   2. Connect an oscilloscope to TP25.
   3. Make sure that the waveform of TP25 becomes as shown in Fig. 2.

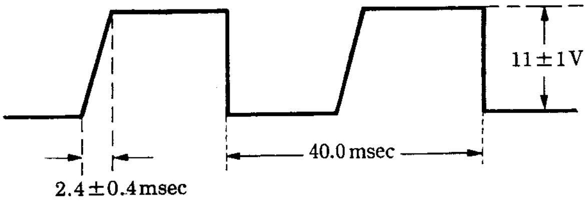


Fig. 2

4. **1/2 Countdown Monostable Multivibrator**
   - * Test Point: TP22
   1. Place the unit in Recording/Play mode.
   2. Connect an oscilloscope to TP22.
   3. Make sure that the waveform of TP22 becomes as shown in Fig. 3.

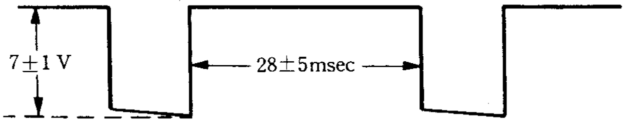


Fig. 3

5. **Sampling Pulse**
   - * Test Point: TP24
   1. Place the unit in Recording Play mode.
   2. Connect an oscilloscope to TP24.
   3. Make sure that the waveform of TP24 becomes as shown in Fig. 4.

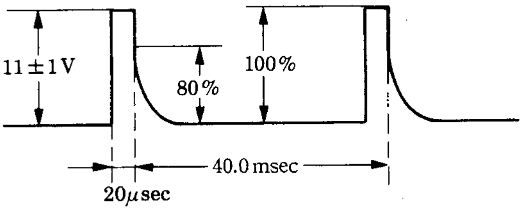


Fig. 4

6. **Sampling Hold**
   - * Test Point: TP24, TP25
   1. Place the unit in Recording/Play mode.
   2. Connect a dual trace oscilloscope to TP24 and TP25, and set the unit in CHOP mode.
   3. Make sure that waveforms of TP24 and TP25 become as shown in Fig. 5.

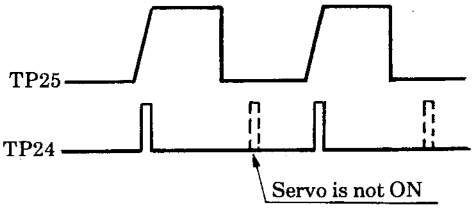


Fig. 5

CAPSTAN SERVO

1. **Control Pulse Polarity**
   - * Test Point: M1
   1. Place the unit in B/W mode.
   2. Connect an oscilloscope to M1.
   3. Playback the reference tape.
   4. Make sure that the waveform of M1 becomes as shown in Fig. 6.

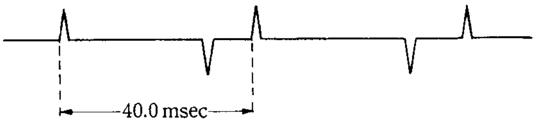


Fig. 6

2. **Output of Control Signal**
   - * Test Point: Opened Terminal of Control Head
   1. Open the control head terminal.
   2. Connect an oscilloscope to the control head terminal by using 1:1 probe.
   3. Playback the reference tape.
   4. Make sure that the waveform of the control head terminal becomes as shown in Fig. 7.

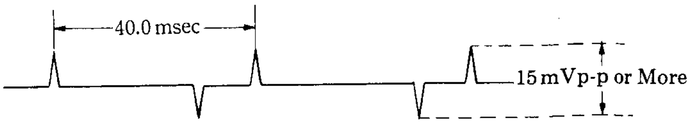


Fig. 7

3. **Recording Voltage of Control Head**
   - * Test Point: Connector P21-5
   1. Place the unit in Recording/Play mode.
   2. Connect an oscilloscope to P21-5 connector.
   3. Make sure that the waveform of P21-5 connector becomes as shown in Fig. 8.

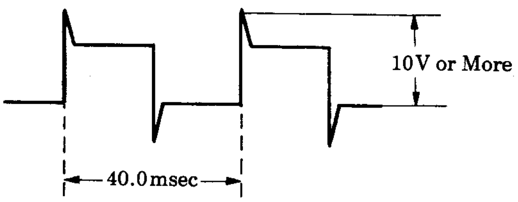


Fig. 8

4. **Reference Signal**
   - * Test Point: TP25C
   1. Place the unit in Recording/Play mode.
   2. Connect an oscilloscope to TP25C.
   3. Make sure that the waveform of TP25C becomes as shown in Fig. 9.

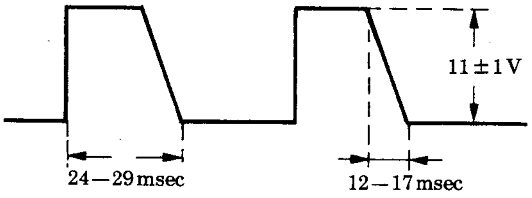


Fig. 9

5. **Sampling Pulse**
   - * Test Point: TP24C
   1. Place the unit in Recording/Play mode.
   2. Connect an oscilloscope to TP24C.
   3. Make sure that the waveform of TP24C becomes as shown in Fig. 10.

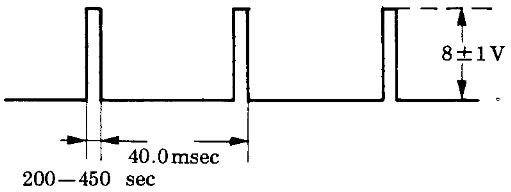


Fig. 10

6. **Capstan Motor Sync Pull-in Adjustment**
   - * Test Point: M6, TP24C, TP25C
   - * Adjustment Point: R1120 (DC motor rotation adjustment)
   1. Playback the reference tape.
   2. Connect a dual trace oscilloscope to TP24C and TP25C, and set it to ADD mode.
   3. Set R1120 to center portion, and make sure that the servo is ON as shown in Fig. 11.
   4. Fully turn R1120 counterclockwise, and then gradually return it clockwise to set it just after the pulse of TP24C locks on trapezoid waveform of TP25C as shown in Fig. 12.
   5. At this time, connect an oscilloscope to M6.
   6. Measure DC level of M6 $[E_1]$.
   7. Connect a dual trace oscilloscope to TP24C and TP25C, and set it to ADD mode.
   8. Fully turn R1120 clockwise, and then gradually return it counterclockwise to set it just after the pulse of TP24C locks on trapezoid waveform of TP25C as shown in Fig. 13.
   9. At this time, connect an oscilloscope to M6.
   10. Measure DC level of M6 $[E_2]$.
   11. Adjust R1120 so that DC level of M6 becomes $\frac{E_1+E_2}{2}=E_3$.
   12. Connect a dual trace oscilloscope to TP24C and TP25C, and set it to ADD mode.
   13. Make sure that servo is ON as shown in Fig. 11.

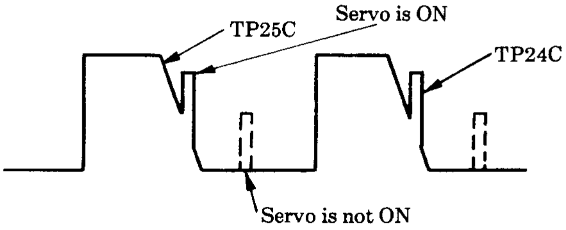


Fig. 11

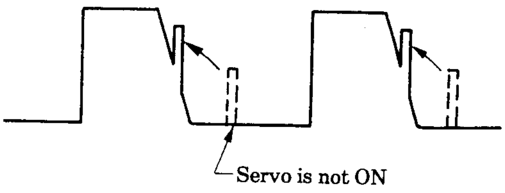


Fig. 12

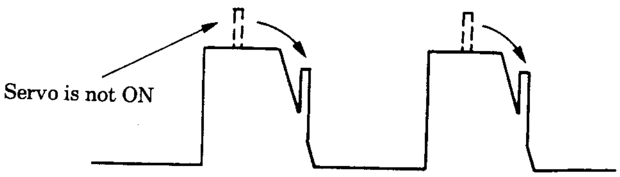


Fig. 13

7. **Tape Speed Adjustment**
   - * Test Point: Audio Out, TP24C, TP25C
   - * Adjustment Point: R248
   1. Short-circuit between base of TR222 and ground by jumper wire.
   2. Playback the reference tape.
   3. At this time, make sure that capstan servo is ON (Refer to Fig. 11).
   4. Disconnect the jumper wire.
   5. Connect a frequency counter to audio out.
   6. Playback the reference tape.
   7. Adjust R468 so that the indication of frequency counter becomes 3000 Hz.

8. **Tracking Adjustment (1)**
   - * Test Point: TP23
   - * Adjustment Point: R290
   1. Playback the reference tape.
   2. Set the tracking control to FIX position.
   3. Connect an oscilloscope to TP23.
   4. Adjust R290 so that the delay time becomes 18±0.5msec. as shown in Fig. 14-A.
   5. Make sure that the delay time varies 4±2—32±5msec. by turning the tracking control.

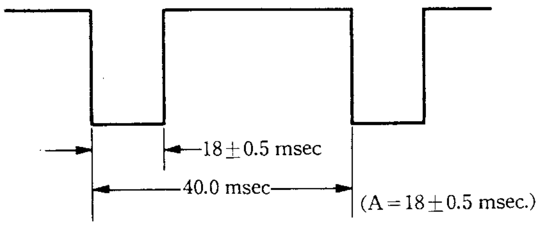


Fig. 14-A

9. **Tracking Adjustment (2)**
   - * Test Point: TP23
   - * Adjustment Point: R2135
   1. Playback the reference tape.
   2. Set the tracking control to FIX position.
   3. Connect an oscilloscope to TP23.
   4. Adjust R2135 so that the delay time becomes A−4.3±0.2 msec. as shown in Fig. 14-B.

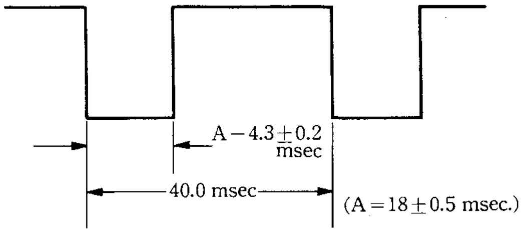


Fig. 14-B

Audio Circuit

1. **Bias Oscillator**
   - * Test Point: TP45
   1. Place the unit in Record mode without the tape running.
   2. Connect an oscilloscope and a frequency counter to TP45.
   3. Make sure that the output voltage becomes 290±50Vp-p, and the output frequency becomes 95±10kHz as shown in Fig. 15.
   4. Confirm no waveform distortion.

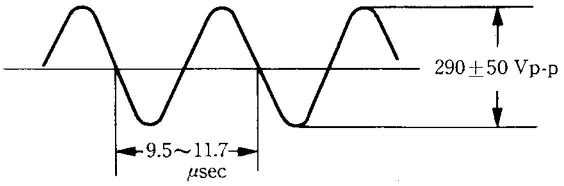


Fig. 15

2. **Bias Current Adjustment**
   - * Test Point: Audio Head
   - * Adjustment Point: C439
   1. Connect a 10Ω resistor in series with the audio head terminal as shown in Fig. 16.
   2. Connect the VTVM between both ends of a 10Ω resistor.
   3. Place the unit in Record mode without the tape running.
   4. Adjust C439 so that the indication of VTVM becomes 650μA.

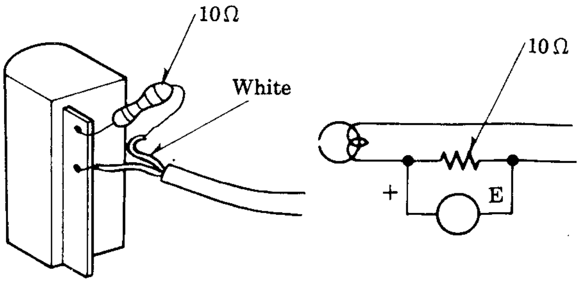


Fig. 16

3. **Meter Adjustment**
   - * Test Point: Indication of Meter
   - * Adjustment Point: R442, R6304

   1. Place the unit in Recording mode.
   2. Supply the signal (1kHz, −60dB) of S.G. to MIC IN.
   3. Connect a VTVM or an oscilloscope to TP43.
   4. Adjust the audio level control (R6304) so that the indication of VTVM becomes 1V rms. (oscilloscope; 2.8Vp-p).
   5. In this condition, adjust R442 so that the indication of audio level meter becomes 0VU.

4. **Playback Output Adjustment**
   - * Test Point: TP43
   - * Adjustment Point: R408

   1. Place the unit in Recording/Play mode.
   2. Supply the signal (1kHz, −60dB) of S.G. to MIC IN.
   3. Set the audio level meter to 0VU, and record.
   4. Connect a VTVM to TP43.
   5. Playback the recorded portion.
   6. Adjust R408 so that the indication of VTVM becomes 1V rms.

5. **Pop Noise**
   - * Test Point: TP43

   1. Connect an oscilloscope to TP43.
   2. Place the unit in Stop mode, and supply no signal.
   3. Make sure that the noise level is 3Vp-p or less when EDIT or DUB button (but, except assemble mode).
   4. Make sure that the noise level is 3Vp-p or less by playing back the portion of item 3 (include assemble mode).

Head Amplifier Circuit

1. **Frequency Characteristic Adjustment**
   - * Test Point: TP510
   - * Adjustment Point: C508, 517, R516, 538

   1. Supply a signal of sweep generator to TP502.
   2. Connect an oscilloscope to TP510.
   3. Adjust C508 and C517 so that 5.1MHz portion becomes maximum.
   4. Adjust R538 so that 1MHz portion of both channels get balanced.
   5. Adjust R516 so that 5.1MHz portion of both channels get balanced.
   6. Repeat the adjustment from item 3 to item 5 so that 1MHz portion and 5.1MHz portion of both channels get balanced.

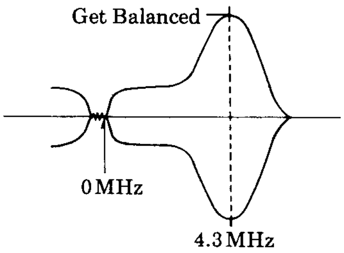


Fig. 17

2. **Bias Trap Adjustment**
   - * Test Point: TP8201
   - * Adjustment Point: L508

   1. Place the unit in DUB/Play mode without tape running.
   2. Connect an oscilloscope to TP8201.
   3. Adjust L508 so that 100kHz component becomes minimum.

Video Circuit

1. **FM Modulator Adjustment**
   - * Test Point: TP802
   - * Adjustment Point: R825, 828, 838, C820

   1. Place the unit in Rec. (E-E) mode, and B/W mode.
   2. Not supply the signal to the unit.
   3. Set the C820 and R838 to center position.
   4. Fully turn R825 clockwise.
   5. Connect a frequency counter to TP802, and adjust R828 so that the indication of frequency counter becomes 3.47MHz.
   6. Disconnect a frequency counter.
   7. Connect an oscilloscope to TP310, and adjust R838 so that the carrier component becomes minimum.
      In case the minimum point of carrier component is not obtained, turn C820, and repeat the adjustment from item 5 to item 7.
   8. After adjustment, connect a frequency counter to TP802.
   9. Make sure that the indication of frequency counter becomes 3.45—3.50MHz.

2. Deviation Adjustment

- * Test Point: TP802, 310
- * Adjustment Point: R818

1. Place the unit in Rec. (E-E) mode and colour mode.
2. Connect an oscilloscope to TP310.
3. Connect a signal generator (5.0 MHz, 50 mVp-p) to TP802.
4. Supply the colour bar signal to VIDEO IN.
5. Observe the white portion (100 %) of colour bar signal.
6. Adjust R818 so that the beat is not occurred as shown in Fig. 18.

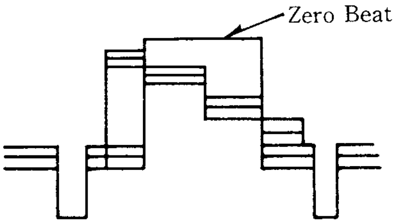


Fig. 18

3. White Clip Adjustment

- * Test Point: TP801
- * Adjustment Point: R825

1. Place the unit in Rec. (E-E) mode and colour mode.
2. Connect an oscilloscope to TP801.
3. Adjust R825 so that the waveform of TP801 becomes as shown in Fig. 19.

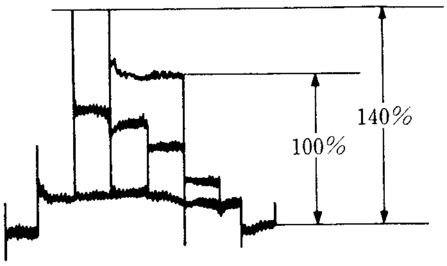


Fig. 19

4. Video Output Level Adjustment

- * Test Point: TP310
- * Adjustment Point: R337, 341

1. Place the unit in Rec. (E-E) mode and B/W mode.
2. Supply the colour bar signal to the VIDEO IN.
3. Connect an oscilloscope to TP310.
4. Adjust R341 so that the output voltage becomes 2.0 Vp-p.
5. Set the colour/B/W selector switch to colour side.
6. Adjust R337 so that the output voltage becomes 2.0 Vp-p.

5. 686 kHz Trap Adjustment

- * Test Point: TP8201
- * Adjustment Point: L806

1. Place the unit in Rec. (E-E) mode and colour mode.
2. Not supply the signal to the unit.
3. Connect a signal generator (686 kHz, 1.5 Vp-p) to TP802.
4. Connect an oscilloscope to TP8201.
5. Adjust L806 so that 686 kHz component becomes minimum.

6. Playback Balance Adjustment

- * Test Point: TP304
- * Adjustment Point: R312, 320

1. Place the unit in Play mode without tape running.
2. Connect a signal generator (3.5 MHz, 10 mVp-p) to TP502.
3. Connect an oscilloscope to TP304.
4. Set the colour/B/W selector switch to B/W.
5. Adjust R312 and R320 so that 3.5 MHz component becomes minimum.

7. Noise Canceller Adjustment

- * Test Point: TP310
- * Adjustment Point: R353

1. Place the unit in Play mode without tape running.
2. Connect a signal generator (3.5 MHz, 10 mVp-p) to TP502.
3. Connect an oscilloscope to TP310.
4. Set the colour/B/W selector switch to B/W.
5. Adjust R353 so that the waveform becomes minimum.

8. Video Recording Current Adjustment

- * Test Point: TP501
- * Adjustment Point: R894

1. Place the unit in Rec./Play mode and colour mode.
2. Connect an oscilloscope to TP501.
3. Fully turn R501 clockwise, and open-circuit CP501.
4. Adjust R894 so that the chroma waveform becomes 160 mVp-p.
5. Not supply the signal to the unit.
6. Adjust R501 so that the output of TP501 becomes 800 mVp-p.
7. After adjustment, short-circuit CP501.

Colour Circuit

1. Rec. ACC Adjustment

- Test Point: TP804
- Adjustment Point: T802

1. Place the unit in Rec. (E-E) mode and colour mode.
2. Supply the colour bar signal to the unit.
3. Connect an oscilloscope to TP804.
4. Adjust T802 so that the chroma becomes minimum, cyan portion of chrominance signal becomes 1.1±0.2Vp-p.

2. Chroma Level Balance Pre-adjustment

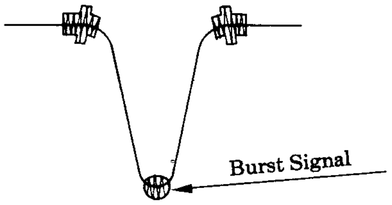
- Test Point: TP805
- Adjustment Point: R894, 8105

1. Place the unit in Rec./Play mode and colour mode.
2. Connect an oscilloscope to TP805.
3. Pre-adjust R894 so that the voltage of TP805 becomes 3.3 Vp-p.
4. Set R8105 to center portion.

3. Playback Burst Gate Adjustment

- Test Point: TP8206
- Adjustment Point: L8208

1. Place the unit in Rec. (E-E) mode and colour mode.
2. Connect an oscilloscope to TP8206.
3. Adjust L8208 so that the burst signal comes into bottom of valley of burst gate pulse as shown in Fig. 20.



Burst Gate Pulse

Fig. 20

4. Playback ACC Adjustment

- Test Point: TP8202
- Adjustment Point: R8211

1. Place the unit in Rec. (E-E) mode and colour mode.
2. Connect an oscilloscope to TP8202.
3. Adjust R8211 so that the cyan portion of chrominance signal becomes 0.8 Vp-p.

5. 4.43MHz Adjustment

- Test Point: TP8204
- Adjustment Point: C8225

1. Place the unit in Rec. (E-E) mode and colour mode.
2. Connect a frequency counter to TP8204.
3. Adjust C8225 so that the indication of frequency counter becomes 4.433619MHz±5Hz.
4. Disconnect a frequency counter.
5. Connect an oscilloscope to TP8204.
6. Make sure that the output voltage is 1.0Vp-p or more.

6. AFC Adjustment

- Test Point: TP8212
- Adjustment Point: L8207, R8328

1. Place the unit in Stop mode.
2. Connect a signal generator (15.075kHz, 200mVp-p) to TP8211.
3. Connect an oscilloscope to TP8212.
4. Adjust L8207 so that the waveform of TP8212 becomes maximum.
5. After above adjustment, slightly turn R8328 so that the waveform of TP8212 becomes maximum.
6. Connect a frequency counter to TP8212, and make sure that the indication of frequency counter becomes 15.070—15.080 kHz.
7. If the indication of frequency counter is not 15.070—15.080 kHz, adjust L8207 again.
8. Disconnect a signal generator.
9. Adjust R8328 so that the output of TP8212 becomes 15.625 kHz, 10—16Vp-p.

7. APC Pre-adjustment

* Test Point: TP8207, TV Picture
* Adjustment Point: T8203, 8205

1. Place the unit in Rec. (E-E) mode and colour mode.
2. Supply the colour bar signal.
3. Connect a TV monitor, and set colour lock control to FIX position.
4. Pre-adjust T8203 so that the hue of colour bar picture becomes normal.
5. Connect an oscilloscope to TP8207.
6. Adjust T8205 so that the voltage of TP8207 becomes 14 Vp-p.
7. In case the voltage of TP8207 does not become 14 Vp-p, adjust T8203.

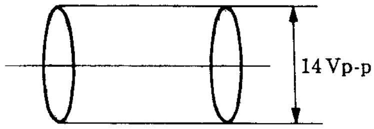


Fig. 21

8. Balance Adjustment of Balance Modulator

* Test Point: TP8203
* Adjustment Point: R8223

1. Place the unit in Rec. (E-E) mode and colour mode.
2. Supply the colour bar signal.
3. Connect an oscilloscope to TP8203.
4. Adjust R8223 so that the leak component becomes minimum.

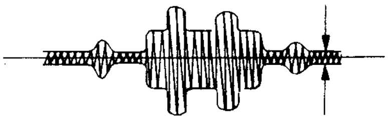


Fig. 22

9. APC Adjustment

* Test Point: TP306, 8210
* Adjustment Point: R372, L8203

1. Place the unit in Rec. (E-E) mode and colour mode.
2. Connect an oscilloscope to TP306.
3. Adjust R372 so that the output of TP306 becomes 3.0 Vp-p.
4. Fully turn the colour lock control clockwise.
5. Return the colour lock control counterclockwise gradually and set it just after hue of colour bar has becomes in normal range.
6. Short-circuit between TP8201 and TP8213 by jumper wire.
7. Connect a frequency counter to TP8210.
8. Measure the frequency...(f_1).
9. Remove the frequency counter and jumper wire.
10. Fully turn the colour lock control counterclockwise.
11. Return the colour lock control clockwise gradually and set it just after hue of colour bar has become in normal range.
12. Connect a frequency counter to TP8210.
13. Measure the frequency...(f_2).
14. Make sure that these frequencies become $|f_1-f_2| \geqq 4.5\text{kHz}$.
15. Set the colour lock control to FIX position.
16. Adjust L8203 so that the frequency becomes f_0.
17. Remove the jumper wire.

Note: $f_0=\dfrac{f_1+f_2}{2}$; $|f_1-f_2| \geqq 4.5\text{kHz}$

10. Chroma Level Adjustment

* Test Point: TP310
* Adjustment Point: R8231

1. Place the unit in Rec. (E-E) mode and colour mode.
2. Connect an oscilloscope to TP310.
3. Supply the colour bar signal.
4. Adjust R8231 so that the burst of TP310 becomes 0.55 Vp-p.

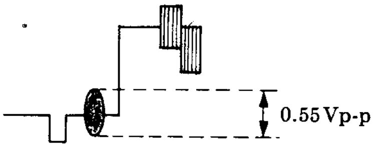


Fig. 23

11. Chroma Playback Balance Adjustment

* Test Point: TP8201
* Adjustment Point: R538, Tracking Control

1. Playback the colour bar portion of reference tape.
2. Connect an oscilloscope to TP8201.
3. Adjust the tracking control so that the waveform becomes maximum.
4. At this time, adjust R538 so that the chroma level of each 1 vertical period becomes equal.

12. Chroma Rec. Balance Adjustment

* Test Point: TP8201
* Adjustment Point: R8105

1. Place the unit in Rec./Play mode and colour mode.
2. Supply the colour bar signal.
3. Connect an oscilloscope to TP8201.
4. Playback the recorded portion.
5. Adjust R8105 slightly so that the chroma level of each 1 vertical period becomes equal in playback mode.

13. **APC Adjustment in Pause Mode**
   - * Test Point: TP8210
   - * Adjustment Point : R8337

1. Place the unit in Rec./Play mode and colour mode.
2. Supply the colour bar signal.
3. Connect a frequency counter to TP8210.
4. Playback the recorded portion.
5. Measure the frequency...(f_0).
6. Place the unit in Pause mode.
7. Make sure that the hue of colour bar picture becomes normal. In case the hue of colour bar picture becomes abnormal, adjust R8337 so that the hue of colour bar picture becomes normal.
8. Measure the frequency...(f).
9. Short-circuit between TP8210 and TP8213.
10. Playback the recorded portion.
11. Measure the frequency...(f_0').
12. Place the unit in Pause mode.
13. Adjust R8337 so that the frequency of TP8210 (f') becomes following value.
    $f' = f_0' - f_0 + f$
14. After adjustment, make sure that the hue of colour bar picture becomes normal in Pause mode.

Timing Circuit

1. **Editing Delay Confirmation**
   - * Check Point: TP61, Terminal 15, 16, TR6604 Collector

1. Connect an oscilloscope to each check point.
2. Place the unit in Play mode and measure the delay time by depressing the edit button.
3. Make sure that the delay time becomes as shown in Fig. 24.

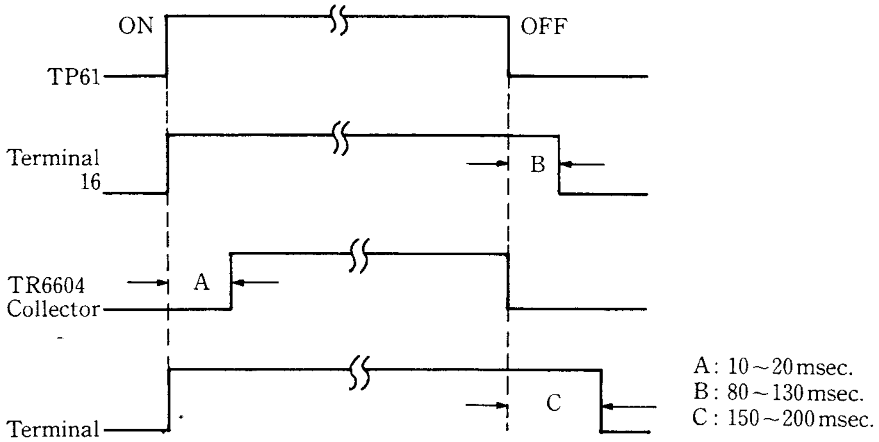


Fig. 24

2. **Downward Transient and Upward Transient of Flip Flop**
   - * Check Point: TP26, 64

1. Connect a dual trace oscilloscope to TP26 and TP64.
2. Make sure, in 3 kinds of editing mode, that the waveform becomes as shown in Fig. 25.
   - * Edit OFF—ON
     Coincide the downward edge of TP26 and upward edge of TP64.
   - * Edit ON—OFF
     Coincide the upward edge of TP26 and downward edge of TP64.

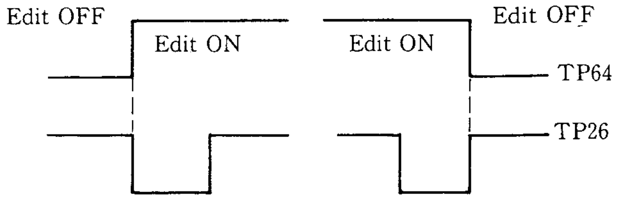


Fig. 25

3. **Monostable Multivibrator for Vertical Additional Gate**
   - * Check Point: TP65

1. Connect an oscilloscope to TP65.
2. Press the edit button from OFF to ON.
3. Make sure that the waveform of TP65 becomes as shown in Fig. 26.

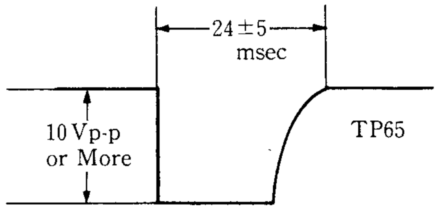


Fig. 26

4. **Confirmation of Erase Circuit**
   - * Check Point: TP67 (P.B→Edit)
   1. Connect an oscilloscope probe to TP67 and push the editing button (Video Only).
   2. Confirm the waveform shown in Fig. 27.

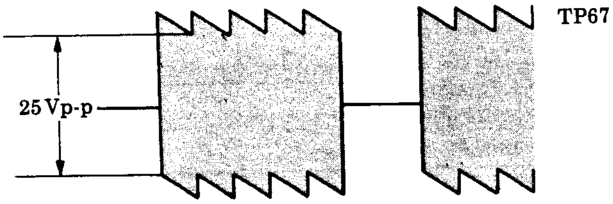


Fig. 27

5. **Adjustment of Erase Control Circuit**
   - * Test Point: TP43 (1kHz Audio Rec.→ Rew→P.B→ Video Only Edit)
   - * Adjustment Point: R6666
   1. Connect a signal generator to the audio input and record 1kHz signal.
   2. Then playback the signal and make insert editing (Video Only) while playing it back.
   3. On above condition, adjust R6666 so that the envelope of audio output at TP43 becomes flat (Fig. 28).

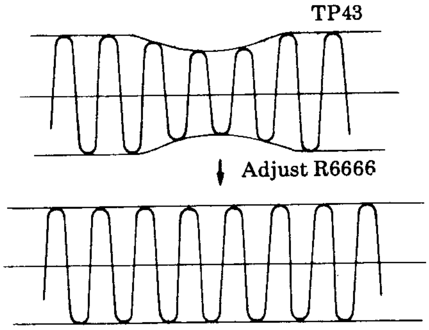


Fig. 28

MECHANISM DISASSEMBLY METHOD

How to Remove Top Cover

1) Loosen 4 screws (A) and remove them.
2) Then pull over the top cover and remove it.

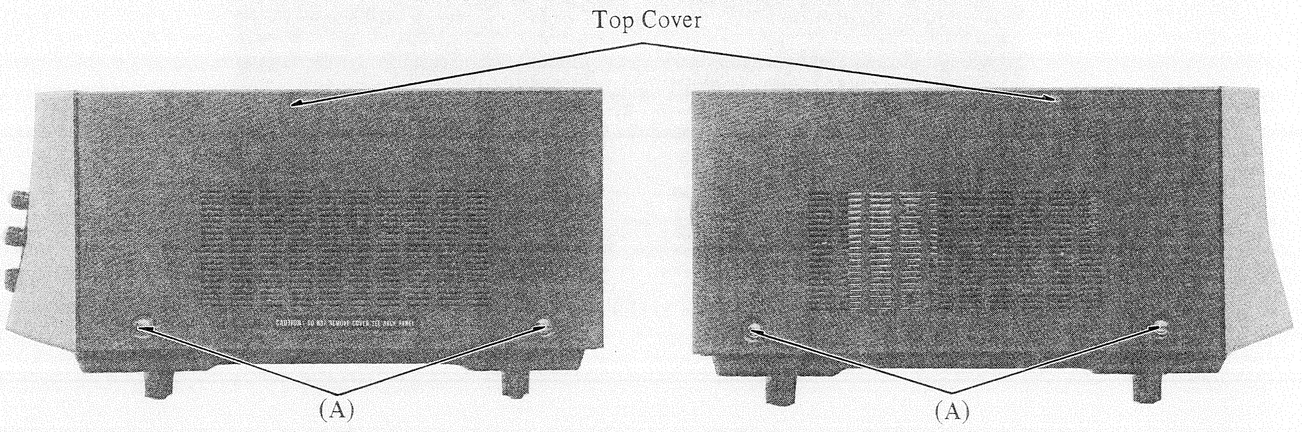


Fig. 1

How to Remove Bottom Cover

Loosen 4 screws (B) and remove them.

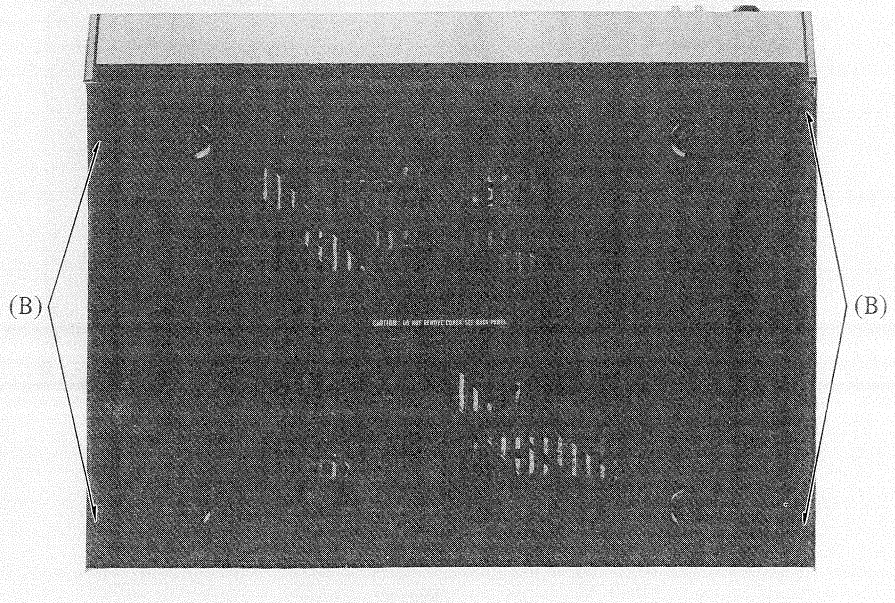


Fig. 2

How to Remove Front Panel

1) Loosen 4 screws (C) and remove them.
2) Loosen 4 screws (D) and remove them.
   The front panel can be removed easily.

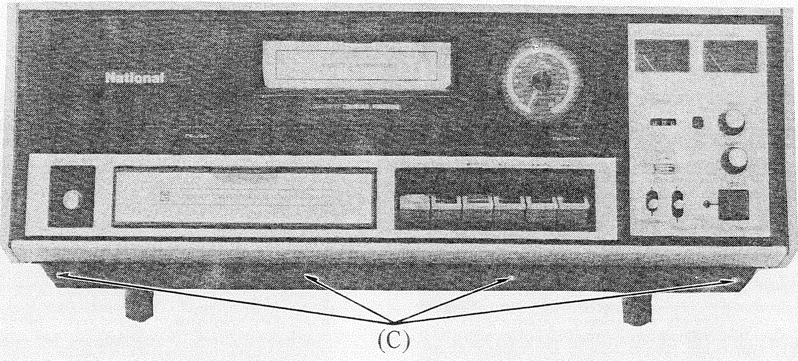


Fig. 3

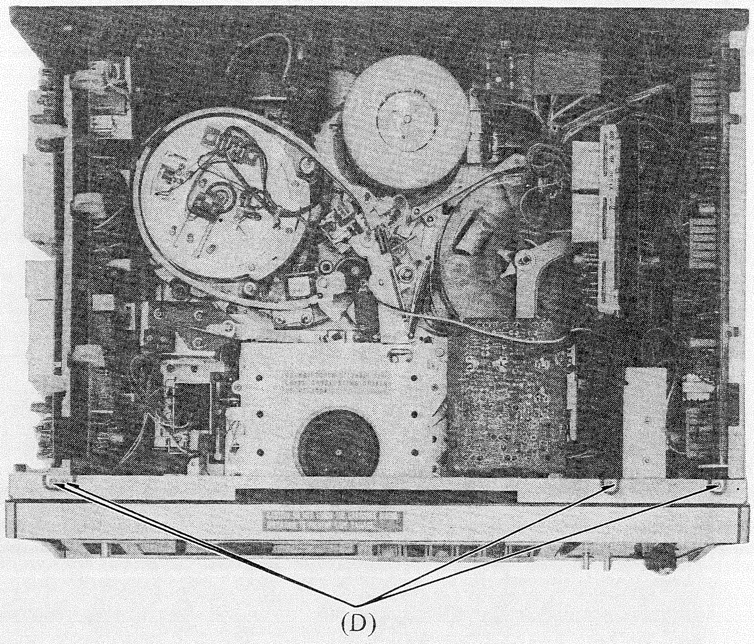


Fig. 4

MECHANICAL SECTION ADJUSTMENTS

SUPPLY REEL TABLE HEIGHT ADJUSTMENT

Adjustment Point: Reel Shaft Height adjusting screw.

Check Point;

1. While the cartridge tape is running, the reel flange does not contact with the cartridge container.
2. The height from the chassis to the upper surface of supply reel table is 55~55.2mm.

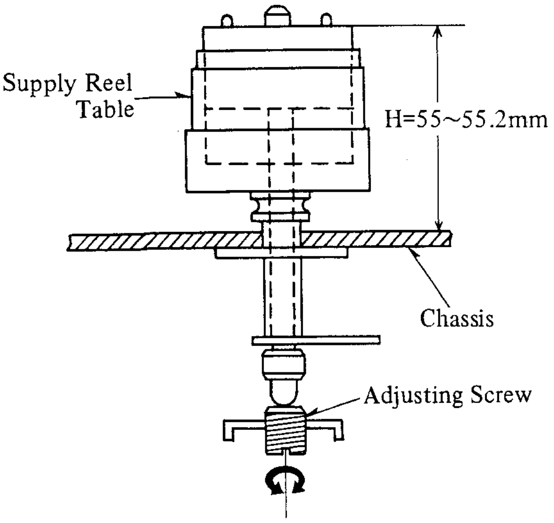

Supply Reel Table
H=55~55.2mm
Chassis
Adjusting Screw

Fig. 5

Adjustment

1. Set the supply reel adjustment cartridge tape (VFK72) in the cartridge compartment, and play the tape.
2. Observe the reel flange through the peeping hole, and make sure that the reel flange does not contact with the cartridge container.
3. If it is in contact, adjust the reel height as follows.
4. In the condition of (1), adjust the reel height by loosening or tightening the adjusting screw so that the gap (a) & (b) between the reel flange and cartridge container are equal.

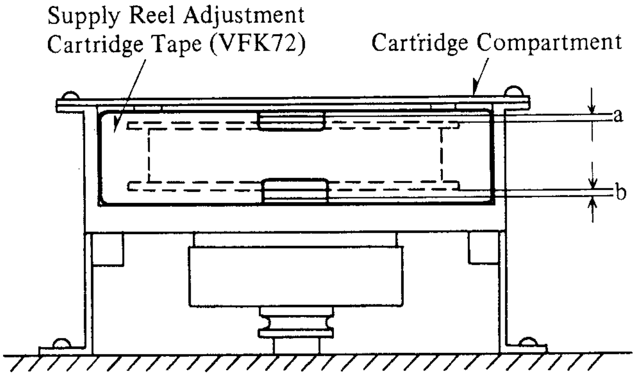

Supply Reel Adjustment Cartridge Tape (VFK72)
Cartridge Compartment
a
b

Fig. 6

TAPE FORWARD RELEASE ADJUSTMENT

Adjustment Point: Ratchet Action Angle

Check Point:

1. Make sure that the ratchet releases surely when the pressure roller solenoid works, after insertion of cartridge tape.

Adjustment:

1. Set the unit in the condition when the supply reel table comes up.
2. Adjust the position of ratchet action angle by using the screw (A) so that the ratchet action angle touches the ratchet when the pressure roller solenoid is pressed 3mm by hand.

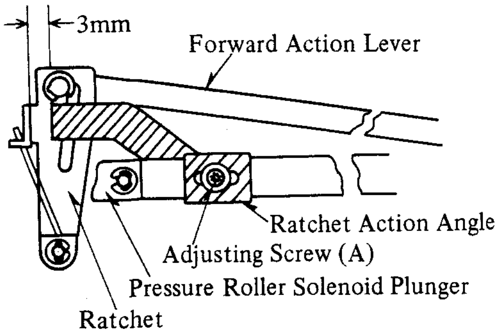

3mm
Forward Action Lever
Ratchet Action Angle
Adjusting Screw (A)
Pressure Roller Solenoid Plunger
Ratchet

Fig. 7

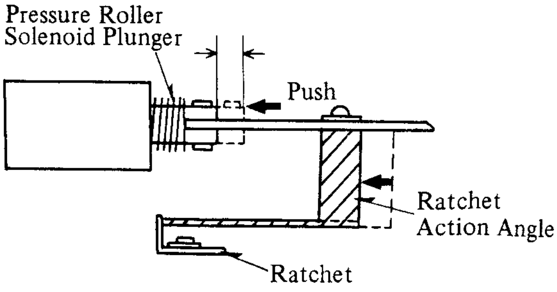

Pressure Roller Solenoid Plunger
Push
Ratchet Action Angle
Ratchet

Fig. 8

TAPE LEADING LEVER ADJUSTMENT

Adjustment Point: Leading Lever Angle.
Check Point:
When the leading lever is depressed on the takeup reel, make sure that the tolerance of (A) & (B) is kept.
Adjustment:
Adjust the position of lever angle by using screw (C).

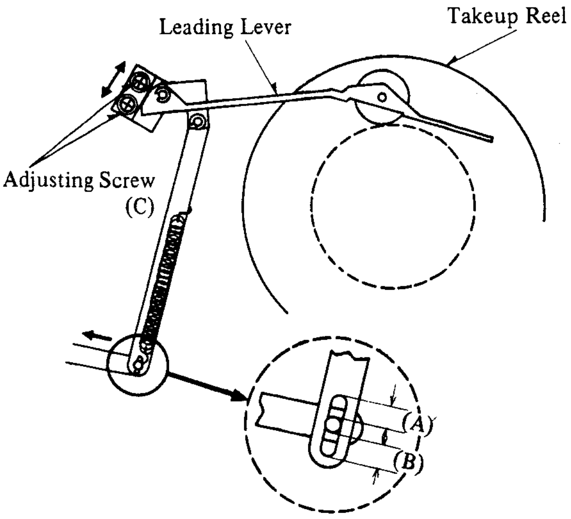
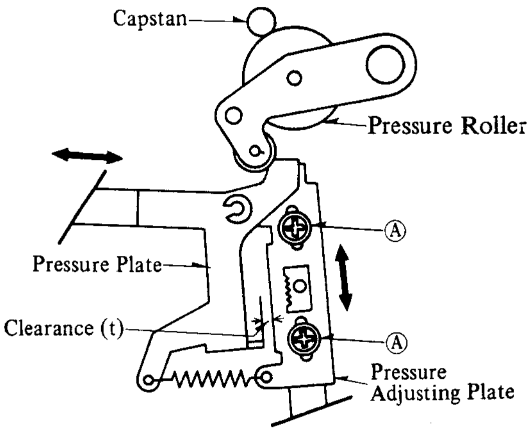

Leading Lever
Takeup Reel
Adjusting Screw
(C)
(A)
(B)

Fig. 9

PRESSURE ROLLER ADJUSTMENT

Adjustment Point: Pressure Adjusting Plate.
Check Point:
Make sure that the clearance (t) is 0.5~1.0mm when the pressure roller solenoid works.
Adjustment:

1. Set the unit in the condition of working pressure roller solenoid.
2. Loosen 2 screws (A) and adjust the position of pressure adjusting plate so that the clearance is 0.5~1.0mm.


Capstan
Pressure Roller
Ⓐ
Pressure Plate
Clearance (t)
Ⓐ
Pressure
Adjusting Plate

(This figure is condition when the solenoid works)

Fig. 10

PRESSURE SOLENOID STROKE ADJUSTMENT

Adjustment Point: Adjusting Plate.
Check Point:
Make sure that the pressure roller contacts with the concave portion of pressure plate surely in stop mode. (see the figure)
Adjustment:
In stop mode, loosen 2 screws (A), and adjust the position of adjusting plate to right side or left side.

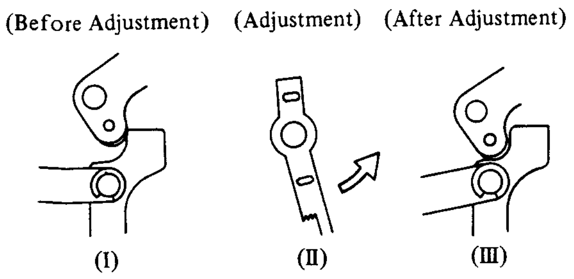

(Before Adjustment)
(Adjustment)
(After Adjustment)
(I)
(II)
(III)

Fig. 11

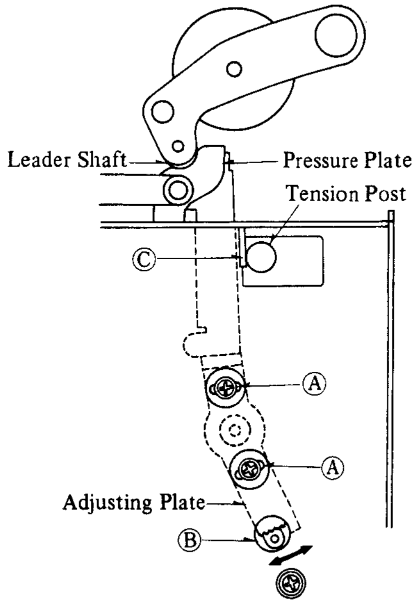

Leader Shaft
Pressure Plate
Tension Post
Ⓒ
Ⓐ
Ⓐ
Adjusting Plate
Ⓑ

Fig. 12

CARTRIDGE COMPARTMENT ADJUSTMENT

Adjustment Point: Cartridge Compartment.
Adjustment:

1. Insert the adjustment cartridge tape (VFK72) into the cartridge compartment.
2. Make sure that the center of the tape reel comes to the center of cartridge container, if it does not, adjust as follows.
3. Loosen the 2 screws (E), and adjust the center position by loosening screws (A), (B), (C), (D).
4. After the adjustment, tighten the screws (E) so that the washers (mounted with screws (E)) contact with the notch section of compartment.

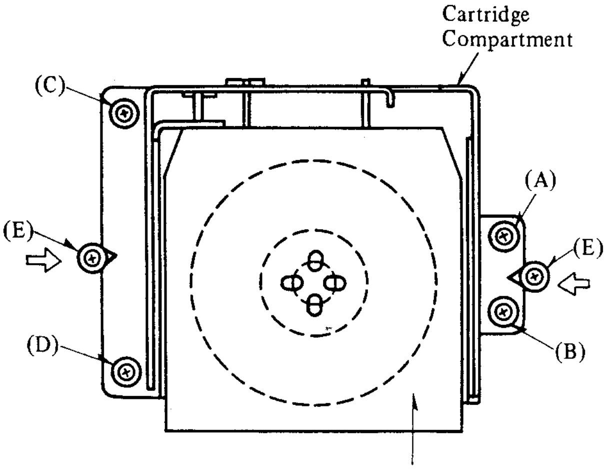

Cartridge Compartment
(C)
(A)
(E)
(E)
(D)
(B)
Adjusting Cartridge Tape VFK72

Fig. 13

BACK TENSION BAND ADJUSTMENT

Adjustment Point: Band control Plate
Check Point:
Make sure that the tolerance between the tension post and cartridge compartment is 0.2~1.0mm in play mode.
Adjustment:

1. In the condition of the power off, set the unit in play mode.
2. Loosen the screw (A), and adjust the band control plate by using screw (B).
   Clockwise, the tolerance increases.
   Counterclockwise, the tolerance decreases.
3. After the adjustment, tighten the screw (A).

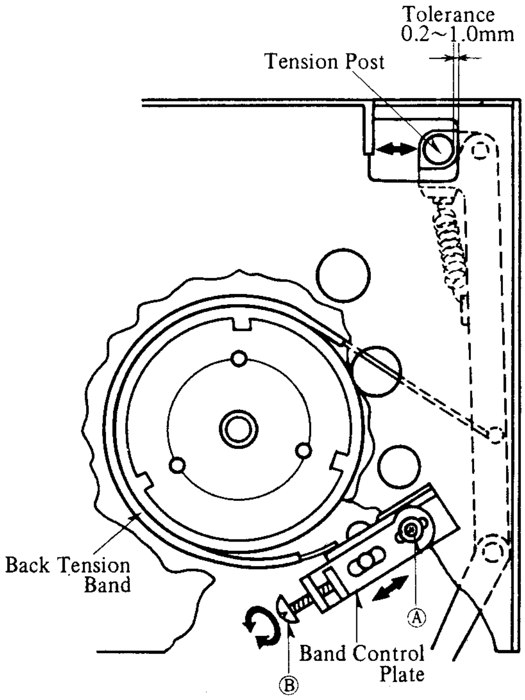

Tolerance 0.2~1.0mm
Tension Post
Back Tension Band
Ⓐ
Band Control Plate
Ⓑ

Fig. 14

BACK TENSION ADJUSTMENT

* Adjustment Point: Skew Lever
* Specification of Back Tension
Skew Control

Center	45g ~ 55g
Minimum	25g ~ 35g
Maximum	75g ~ 95g

* Check Point:

1. When the REC button is pressed, tension adjusting lever resets to the center position (free).
2. Tape speed variation range is 3Hz or less on the playback of 3KHz signal.

* Adjustment:

1. Remove the upper plate of cartridge compartment and the tape leading guide and head-amp. circuit board and video-rec circuit board and shield board.

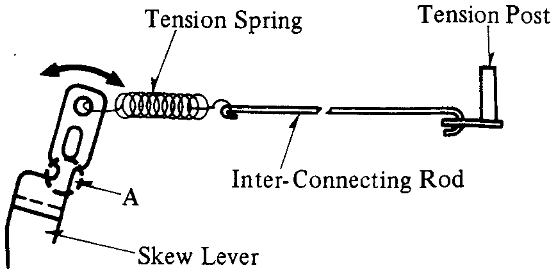

Tension Spring
Tension Post
A
Inter-Connecting Rod
Skew Lever

Fig. 15

2. Turn the power off.
3. Set the reel up-down mechanism on the upper position. and pull the power solenoid as in play mode.
4. Put the full wound tape reel (without cartridge container) on the supply reel table and thread the tape as figure.
5. Set the tension gauge (100g/VFK62) to the end of tape.
6. Pull out the gauge in arrow direction at a constant speed of 16cm/sec (the same speed as the tape running in playback mode).
7. And turn the skew knob to the center position, minimum and maximum position and measure the tension of each positions while pulling out the gauge.
8. When adjustment is required, bend the position (A) of skew lever either to right or left side.

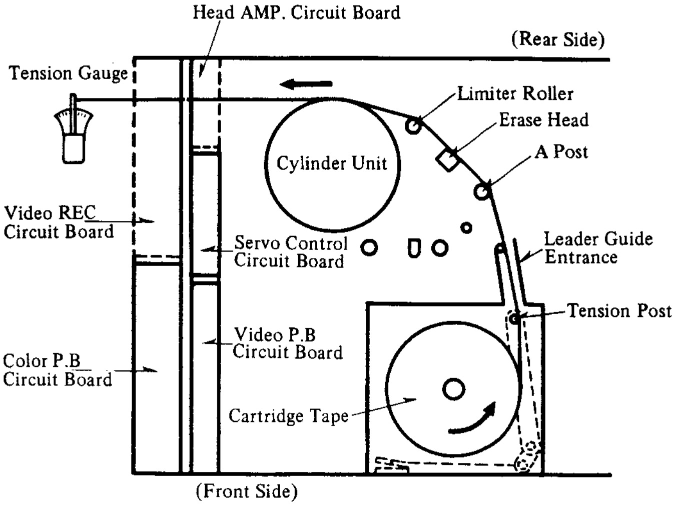

Head AMP. Circuit Board
(Rear Side)
Tension Gauge
Limiter Roller
Erase Head
Cylinder Unit
A Post
Video REC Circuit Board
Servo Control Circuit Board
Leader Guide Entrance
Tension Post
Video P.B Circuit Board
Color P.B Circuit Board
Cartridge Tape
(Front Side)

Fig. 16

SUPPLY BRAKE ADJUSTMENT

Adjustment Point: Supply Brake Solenoid.

Check Point:

1. Make sure that the clearance (t1) is 0.3mm when the supply brake solenoid works.
2. Make sure that the brake roller contacts with the reel table when the mode is changed from play to stop.
3. Make sure that the brake roller separates from the reel table when the mode is changed from REW to STOP.
4. The pressure force (F) must be 5~10g.
5. Brake torque (A) direction 600~900gcm
   (B) direction 100~220gcm
6. Make sure that no grease or dust and oil etc. adhere to the brake roller and reel table (wipe the brake roller and contact section of reel table by using "freon or alcohol" before measuring the torque).

Adjustment:

1. Remove the cartridge compartment unit.
2. Set the reel torque adaptor (VFK73 for supply reel) to the torque gauge (VFK69).
3. In stop mode, set the another side of adaptor to the reel table.
4. Rotate the torque gauge to the direction (A) or (B), and read the value indicated on the torque gauge when the reel table begins rotating.

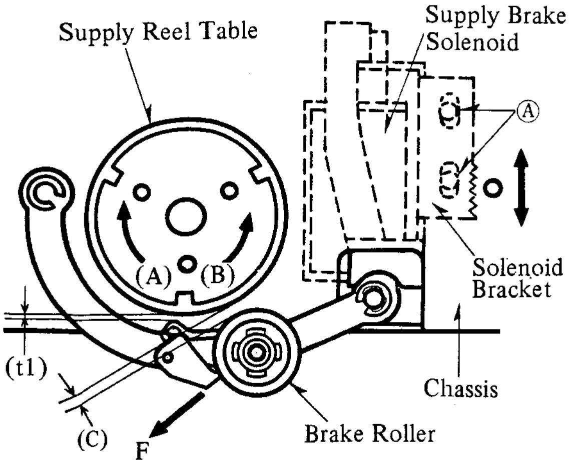

Supply Reel Table
Supply Brake Solenoid
Ⓐ
(A)
(B)
Solenoid Bracket
(t1)
Chassis
(C)
F
Brake Roller

Fig. 17

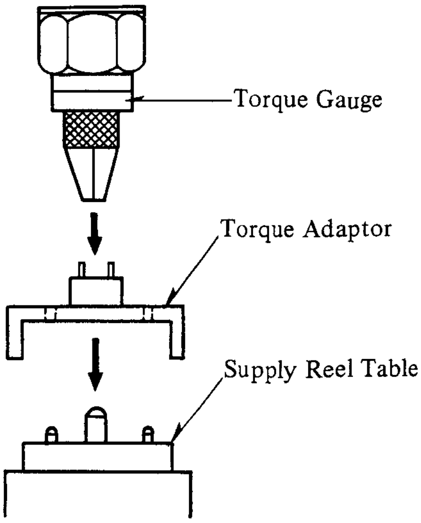

Torque Gauge
Torque Adaptor
Supply Reel Table

Fig. 18

FORWARD MICRO SWITCH ADJUSTMENT

Adjustment Point: Forward Micro Switch Ass'y.
Check Point:

1. Make sure that switches work surely when the cartridge tape is inserted.
2. The clearance of switch actuator should be 0.1~0.5mm.

Adjustment:

1. After turning the power switch off, set the unit in the condition when the supply reel table comes up. At the same time, the action pin pushes the actuator (A) mounted forward action lever.
2. And then, measure the clearance of switch actuator.
3. If value is no good, adjust the position of switch bracket by screw (C) so that clearance is 0.1~0.5mm.

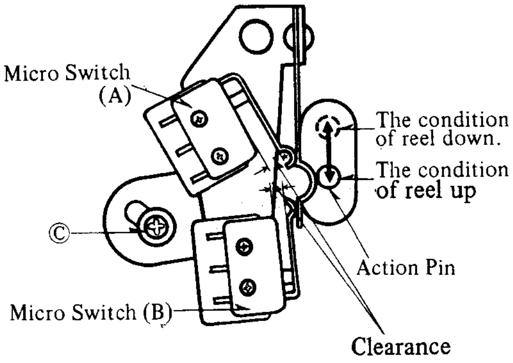

Micro Switch (A)
The condition of reel down.
The condition of reel up
©
Action Pin
Micro Switch (B)
Clearance

Fig. 19

EJECT STOPPER ARM ADJUSTMENT

Adjustment Point: Connecting Rod.
Check Point:
Make sure that the gap (t) between the eject stopper arm and slide plate is 0.5~1.5mm.
Adjustment:

1. In the condition of the reel table down, adjust the length of the connecting rod by the nut (B) so that the gap (t) is the slide plate is 0.5~1.5mm.
2. After adjustment, lock the nut (B) by the lock nut.

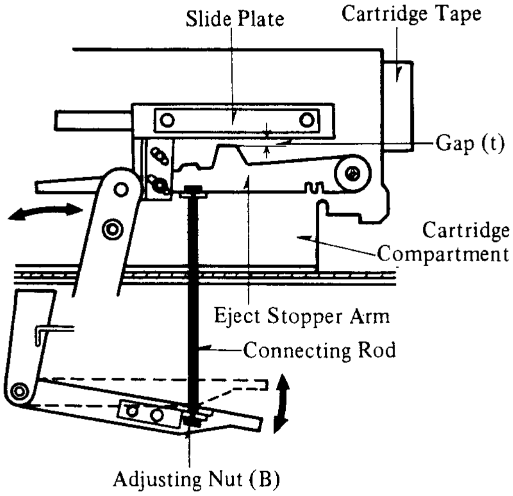

Slide Plate
Cartridge Tape
Gap (t)
Cartridge Compartment
Eject Stopper Arm
Connecting Rod
Adjusting Nut (B)

Fig. 20

TAKEUP BRAKE ADJUSTMENT

Adjustment Point: Takeup Brake Solenoid Unit
Check Point:

1. Make sure that the clearance (T1) is 0.3~0.7mm when the brake solenoid does not work.
2. Make sure that the clearance (T2) is 0.5~1.0mm when the brake solenoid works.

Adjustment:

1. If the clearance (T1) is not good, loosen 2 screws (A) and adjust the position of the solenoid bracket.
2. If the clearance (T2) is not good, adjust the takeup brake lever by bending the plate (B) to inside or outside.

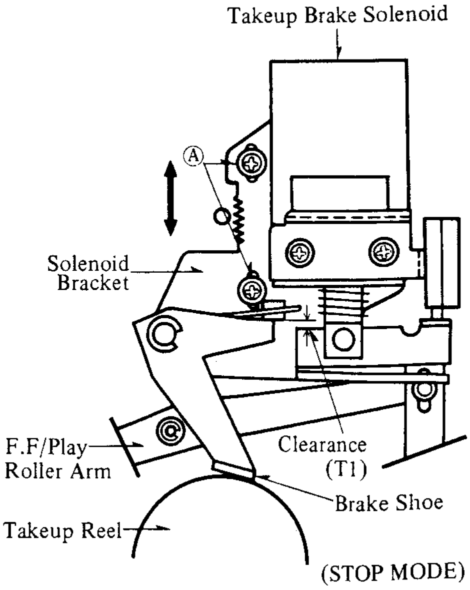
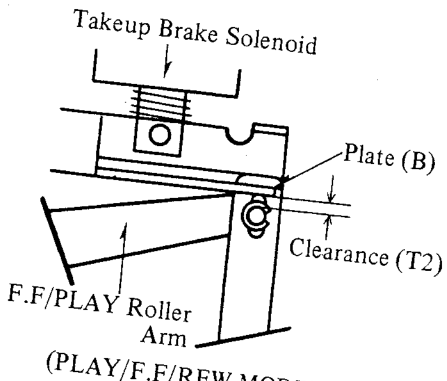

Takeup Brake Solenoid
Ⓐ
Solenoid Bracket
F.F/Play Roller Arm
Clearance (T1)
Brake Shoe
Takeup Reel
(STOP MODE)

Fig. 21


Takeup Brake Solenoid
Plate (B)
Clearance (T2)
F.F/PLAY Roller Arm

(PLAY/F.F/REW MODE)

Fig. 22

REWIND SOLENOID ADJUSTMENT

Adjustment Point: Rewind Solenoid Adjusting Plate.

Check Point:

1. Make sure that the clearance (T1) is 0.3~0.7mm when the rewind solenoid works.

Adjustment:

1. Loosen the 2 screws (A) and adjust the position of the rewind solenoid so that the clearance is 0.3~0.7mm.
2. And adjust the adjusting plate by using screw (B) so that the interlocking pin comes to the center position of plate's hole when the rewind solenoid works.

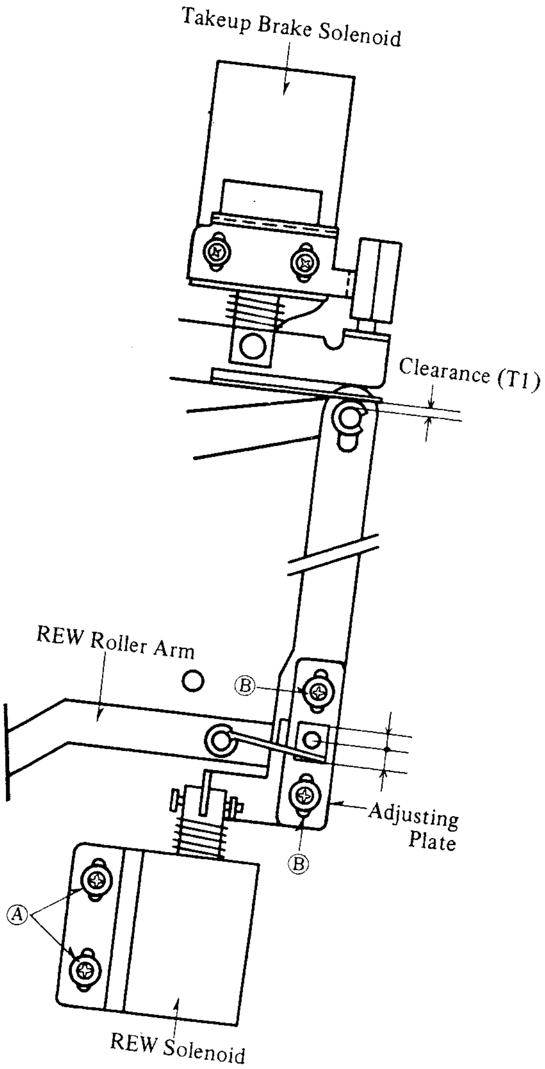

Takeup Brake Solenoid
Clearance (T1)
REW Roller Arm
Ⓑ
Adjusting Plate
Ⓑ
Ⓐ
REW Solenoid

Fig. 23

USE SWITCH ADJUSTMENT

justment Point: Switch Lever

ck Point and Adjustment

ake sure that the micro switch works earlier than the lide switch.

it is not in this condition, adjust by bending the position) of switch lever.

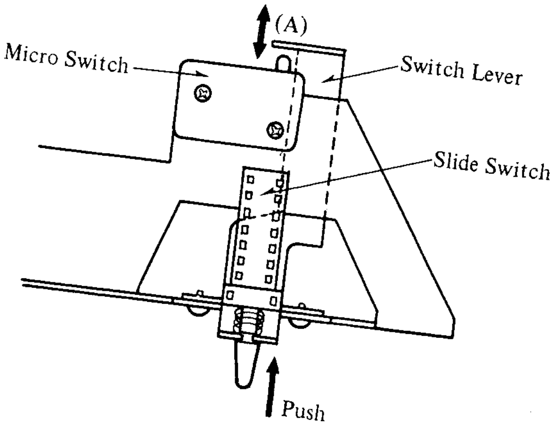

(A)
Micro Switch
Switch Lever
Slide Switch
Push

Fig. 24

MIS-ERASE PREVENTION SWITCH ADJUSTMENT

Adjustment Point: Mis-erase prevention switch bracket.

Check Point:

1. When the cartridge tape with red button is inserted into cartridge compartment, make sure that the mis-erase detection lever contacts with the center position of action lever (for miserase prevention).
2. And then, the gap (C) should be 0.5~1.0mm.

Adjustment:

Loosen 3 screws (D), and adjust the position of the mis-erase prevention switch bracket.

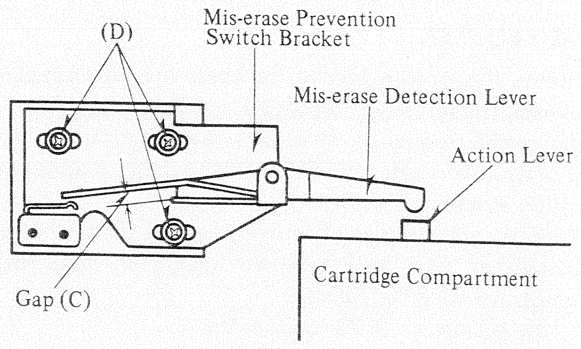

(D)
Mis-erase Prevention Switch Bracket
Mis-erase Detection Lever
Action Lever
Cartridge Compartment
Gap (C)

Fig. 25

MICRO SWITCH ADJUSTMENT FOR TAKEUP BRAKE SOLENOID

Adjustment Point: Switch Bracket

Check Point and Adjustment:

1. In play or F.F./REW mode make sure that this micro switch turns on. (the motor begins rotating).
2. Loosen 2 screws (A), and adjust the position of switch bracket so that the gap (B) is 0.1 ~ 0.5mm when the solenoid works.

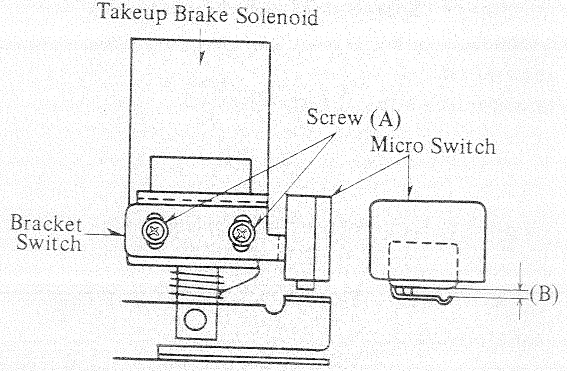


Fig. 26

FREE RUNNING

* Adjustment Point: Motor Pulley

* Specification: Free Running Rotation 1522^{+3}_{-2} r.p.m.

* Recheck when the following conditions are observed.

1. During playback, if the picture is distorted periodically.
2. When replacing the cylinder belt.

* Measurement & Adjustment

1. Make sure that the cylinder belt is installed properly on the pulley.
2. Check if the belt is placed in the center position of the pulley.
3. Place the unit in REW mode, connect TP26 to the oscilloscope.
4. Count the time that the waveform (A) passes 10 times leftward from right.
5. The time shall be in the range of 22.3 ~ 26 seconds.
6. When the waveform (A) passes rightward from left, the free running rotation is 1500 r.p.m. or less.
7. If it is no good, adjust the rotation by replacing the motor pulley so that optimum free run speed is obtained.

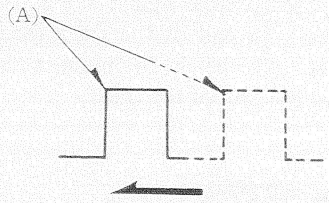


Fig. 27

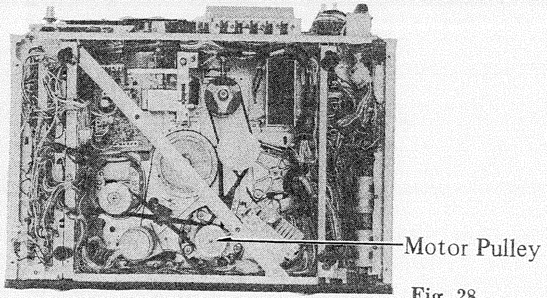
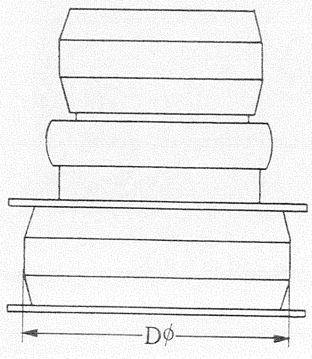


Fig. 28



Part No.	Mark	Diameter Dφ mm ± 0.01 mm	
VDP0306	5	24.10	Slower ↑ Select one of these ↓ Faster
VDP0447	K	28.20	
VDP0449	M	28.40	

Fig. 29

WOW & FLUTTER

1. Connect the wow meter to the audio output terminal and playback the reference tape (3KHz audio signal).
2. Measure the frequency variation (wow & flutter) at beginning portion of tape, middle and end for approximately one minute, at least two times.
3. Calculate each average of values measured at three different portions of tape and take the maximum value of the averages for wow & flutter.
   wow & flutter : 0.22 r.m.s. or less
4. For adjustment, Check and replace the parts.
   - * Back tension variation of supply reel side
   - * Vibration of capstan shaft and pressure roller
   - * Flywheel
   - * Capstan belt
   - * Vibration of pulley for transmission

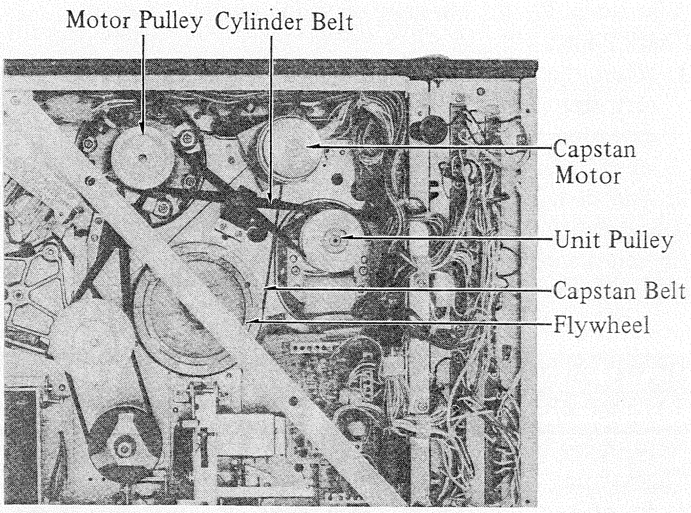


Fig. 30

TAPE INTERCHANGEABILITY ADJUSTMENT

* Adjustment Point: Tape Transportation
* Test Point: TP501 (On the left circuit Board Angle)

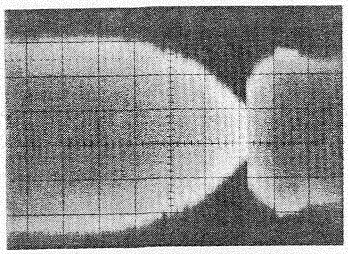
1. Connect an oscilloscope to TP501.
2. Connect a TV monitor and playback the recorded reference tape. (VFM5100A/VFM5180A)
3. Limiter roller, Tape guide post (A), Erase head Adjustment.
   3-1) Examine oscilloscope signal, and if there is a lack of envelope at the end of the track (See Fig. 31) adjust the limiter roller height to obtain as flat an envelope as possible at the end of the track.

To be certain that this adjustment has be done properly, rotate the tracking control so that mistracking occurs.

The total output will be reduced, but the amount of flatness at the end of the track should only change slightly.

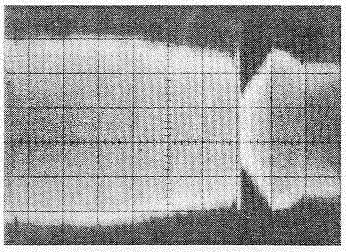
If there is a large change of flatness at the end of track, the limiter roller height must be readjusted.

Waveform on TP301.



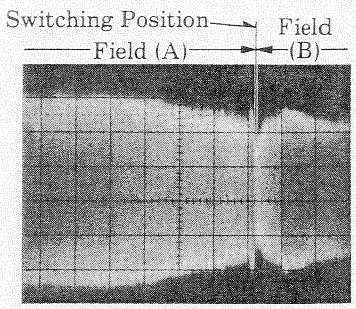
Lack of envelope at the end of track

Fig. 31



Lack of envelope at the beginning of track

Fig. 32



Envelope adjusted properly

Fig. 33

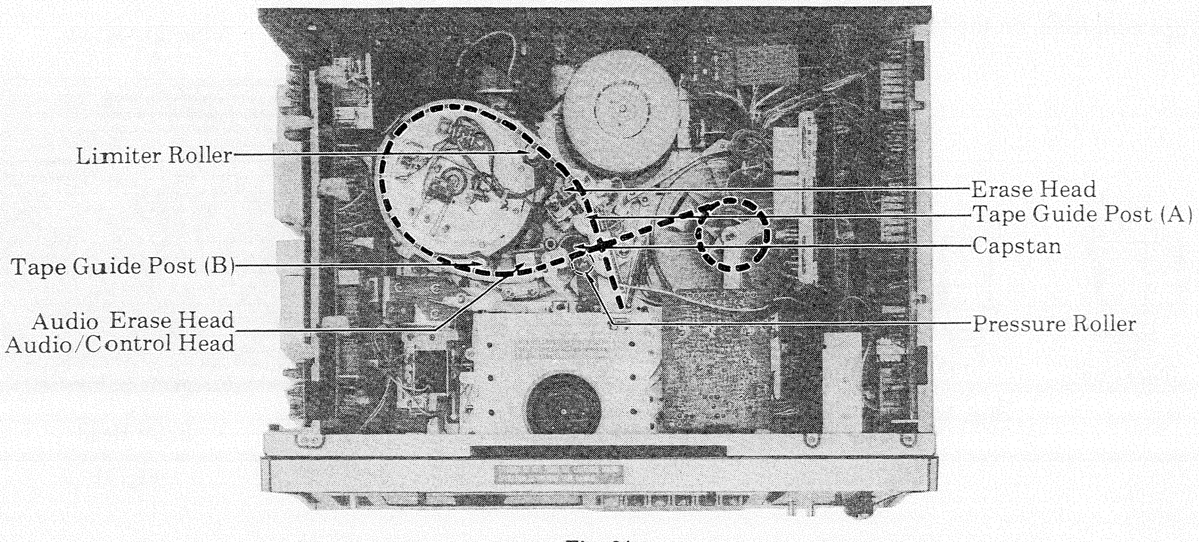

Limiter Roller
Tape Guide Post (B)
Audio Erase Head
Audio/Control Head
Erase Head
Tape Guide Post (A)
Capstan
Pressure Roller

Fig. 34

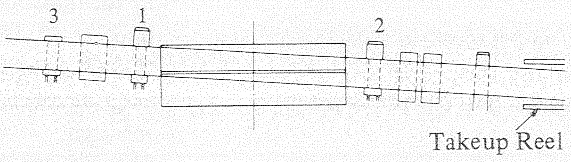

3
1
2
Takeup Reel

Fig. 35

*** Video Output Stability**

1. Connect an oscilloscope probe to TP501
2. Connect the monitor TV to the unit and playback the recorded reference tape (VFM5100A) and measure the video output envelope.
3. Measure the maximum output (V), output at the lower portion of video track (V1), at the middle portion (V2) and at the upper portion (V3) at any position of skew lever.
   V1/Vmax = 0.6, V2/Vmax = 0.8, V3/Vmax = 0.6
4. Watching the output waveform, move the posts (2), (3), (4), up and down, and set the tape run becomes smoothly.

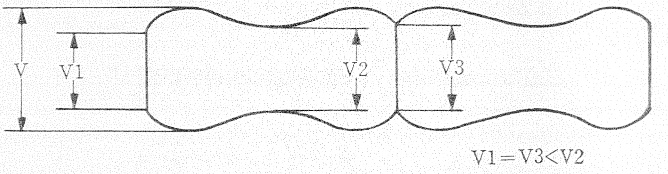

V
V1
V2
V3
V1=V3<V2

Fig. 36

3-2) After the limiter roller height has been adjusted, check to be sure that the tape is riding smoothly within the limiter roller.
Be sure the edges of the tape are not rubbing against the edges of the limiter roller.
If this problem does exist, adjust height of the "Tape guide post (A)" or "Erase head tilt" if necessary.

3-3) After adjusting the tape guide post (A) height and the erase head tilt, the height of the erase head must be checked.
The main erase head gap must cover all tracks-control, video and audio.
Adjust the height if necessary.
To adjust height, 2 screws must be turned equally so that "TILT" won't be changed.

Tape condition on the Limiter roller.

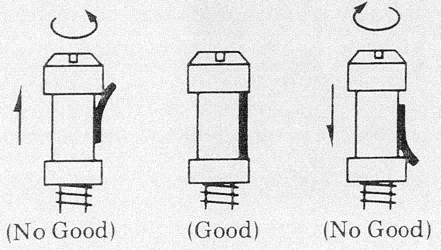

(No Good)
(Good)
(No Good)

Fig. 37

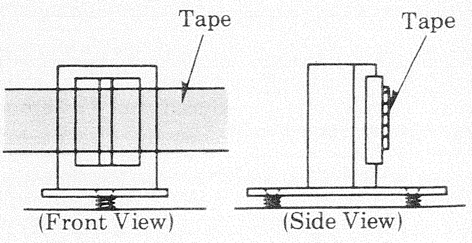

Tape
Tape
(Front View)
(Side View)

Fig. 38

Tape condition on the tape guide post.

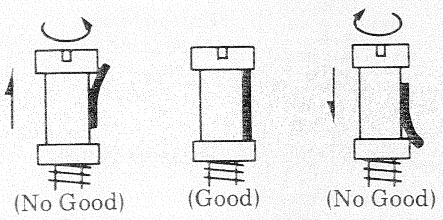

(No Good)
(Good)
(No Good)

Fig. 39

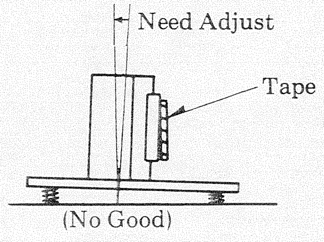

Need Adjust
Tape
(No Good)

Fig. 40

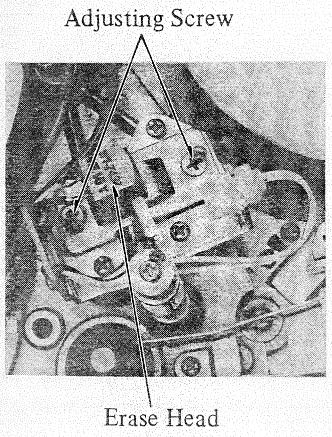

Adjusting Screw
Erase Head

Fig. 41

4. Tape guide post(B), Audio erase/Audio/Control Head Adjustment.

4-1) Examine oscilloscope signal and if there is a lack of envelope at the beginning of the track, (See Fig. 32) adjust the height of the tape guide post (B) to obtain as flat an envelope as possible.
As with adjustment of limiter roller height, rotate tracking control so that mistracking occurs.
Again check for flatness of envelope at the beginning of the track, and readjust the tape guid post (B) height if necessary.

Tape condition on the tape guide post (B)

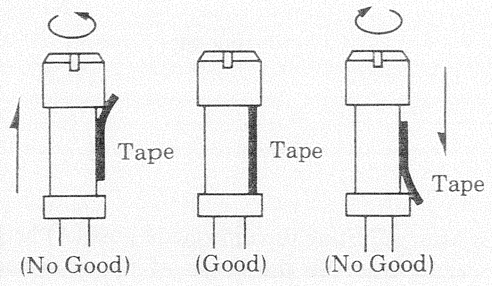

Tape
Tape
Tape
(No Good)
(Good)
(No Good)

Fig. 42

4-2) After adjusting tape guide post (B), be sure the edges of the tape are not rubbing against the edges of this post.
If this is the case, adjust the tilt of the audio erase/audio/control head to force the tape up or down as required.
The tilt can be adjusted with the one phillips head screw in back of the head.

4-3) After adjusting the audio erase/audio/control head tilt, the height of the audio erase/audio/control head must be readjusted as shown below.

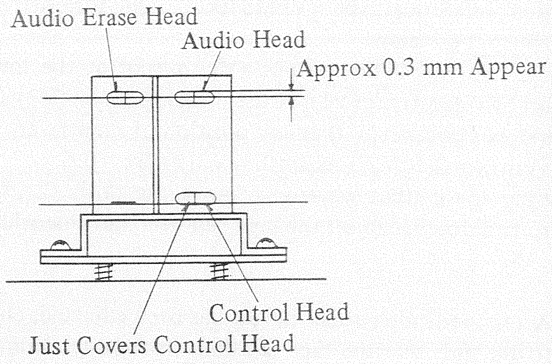

Audio Erase Head
Audio Head
Approx 0.3 mm Appear
Control Head
Just Covers Control Head

Fig. 43

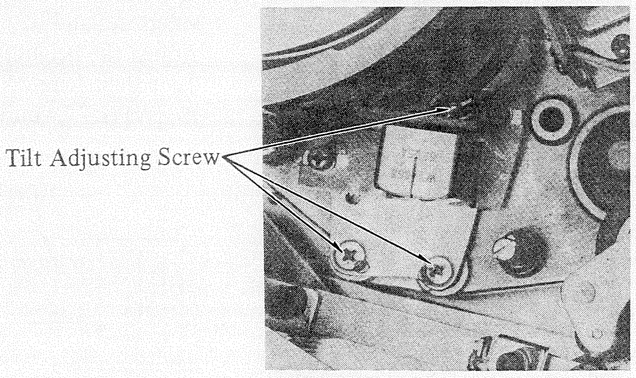

Tilt Adjusting Screw

Fig. 44

5. Control Head Position Adjustment.
   5-1) Rotate tracking control to "FIX" position.
   5-2) Loosen 2 screws which hold the audio erase/audio/control head assembly. Move the assembly along the tape path until the oscilloscope pattern at TP501 reaches maximum envelope.
   5-3) Retighten the 2 screws.

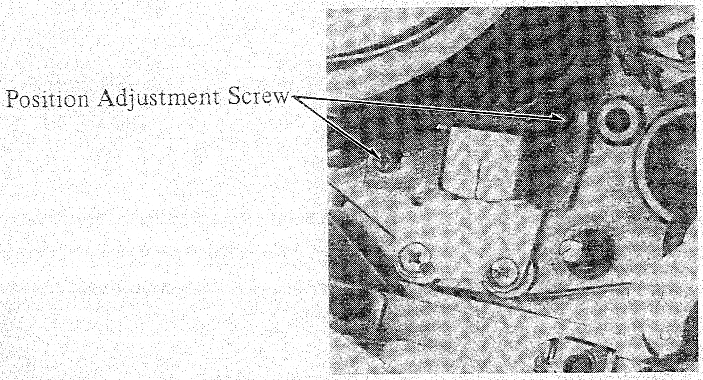


Fig. 45

* **Playback Shifter Variation Range**

1. Connect an oscilloscope probes to TP23 and ground.
2. Connect a monitor TV to the unit and playback the recorded reference tape (VFM5100A).
3. Move the skew lever to maximum, center and minimum position and read the playback shifter variation range.
   PLAYBACK SHIFTER VARIATION RANGE: 9 msec or more

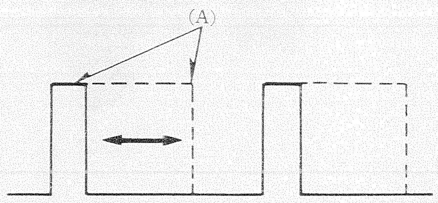


Fig. 46

* **Interchangeability Margins**

1. Use the same measurement procedures as above.
2. As against the fix position, the tape interchangeability margins to forward and backward should be 3.0 msec or more and difference of their margins should be within 0.5 msec.
3. Loosen the adjusting screws (A) and move the audio/control and erase head right or left to satisfy the above value.

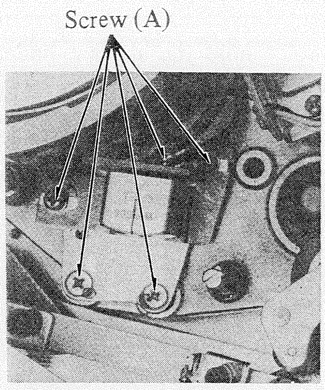


Fig. 47

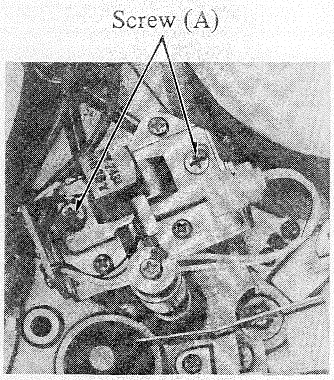


Fig. 48

180° Azimuth Adjustment

* Test Point: TV Screen
* Adjustment Point: P.G. Coil, Screw (a)

1. Playback the reference tape (VFM5100A)
2. Place the unit in Still mode.
3. Visual inspection on TV monitor.
4. Adjust screw (a) for 2 switching pulse noise (appearing at the head switching position) to be superposed.

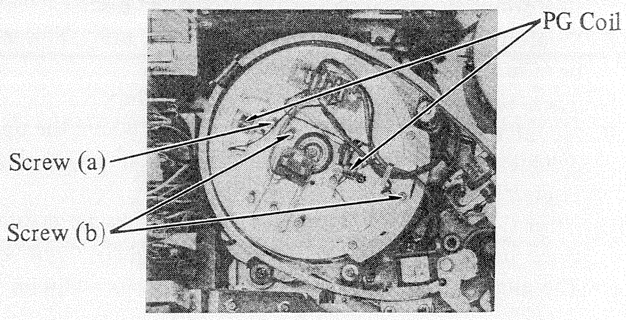


Fig. 49

Head Switching Gap Noise Adjustment

* Test Point: TV Screen

* Adjustment Point: P.G. Coil, Screw (b)

1. Playback the reference tape (VFM5100A)
2. Visual inspection on TV monitor.
3. Adjust screw (b) so that the head switching gap noise becomes minimum as shown in Fig. 50.

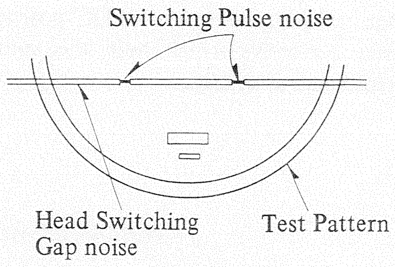


Fig. 50

VIDEO HEAD REPLACEMENT & ADJUSTMENT

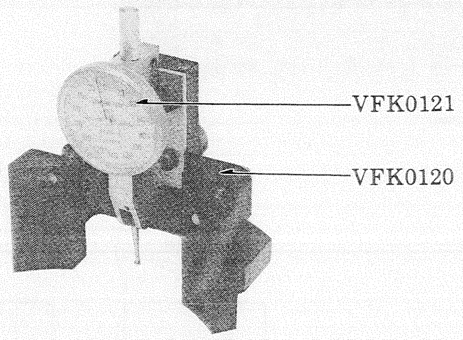


Fig. 51

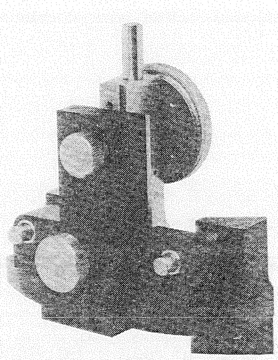


Fig. 52

1. Remove the Tape Leader Guide unit.
2. Unscrew 2 bolts (A) and remove the upper cylinder using allen wrench (VFK50).
   (**Caution**: While removing bolts, hold the upper cylinder securely in your hand to prevent the upper cylinder from falling down and damaging the head tip.)
3. Unscrew the slip ring holding screw (B) and remove the slip ring.
   (**Caution**: Do not unsolder the wires at the slip ring itself but at the other end of the wires.)
4. Unsolder 3 wires (C) with connected to the slip ring.
5. Unsolder 4 wires (D), (E). (Do not unsolder the wires on the head disc side.)
6. Unscrew 4 screws (F) which hold the head disc, and remove the head disc.
7. Check each head within the new head disc and be sure that no head coil is open or shorted to the disc.
8. Carefully mount the new head disc to the unit. This must be mounted as a complete assembly only.
   Then, tighten holding screws (F) only slightly.
9. Mount the protrusion gauge to the holes where the upper cylinder is normally mounted by using bolts (A) as shown in Fig. 54 and Fig. 58.
10. Align the finger of the dial gauge to the perimeter of the video head disc so that the finger is slightly depressed. The angle of the finger can be changed by bending the finger, and the entire gauge can be brought in or out with screw (G). (See Fig. 57 and Fig. 58.)
11. Rotate the head disc slowly and measure the swing of the dial gauge needle. This indicates how off-center the disc has been mounted.
12. Adjust the centering of the head disc so that the swing of the dial gauge needle becomes less than 0.010mm (10 microns).
13. After completing this adjustment, tighten holding screws (F).
14. Remove the protrusion gauge.
15. Mount the slip ring and solder all lead wires observing original polarities.
16. Mount the upper cylinder with care.
17. Check that the height difference of both heads is less than 0.005mm (5 microns) using a microscope. Adjust to this tolerance using head height adjusting screws.
18. If a microscope is not available, playback the standard recorded reference tape in the still mode and adjust the height of one head only so that the still noise band becomes as thin as possible.

Note: Do not attempt to replace the video heads without this servicing jig.
When replacing the video heads on this model, the entire Rotary Head Disc Unit must be replaced. Do not replace one of the video heads of flying erase head individually.

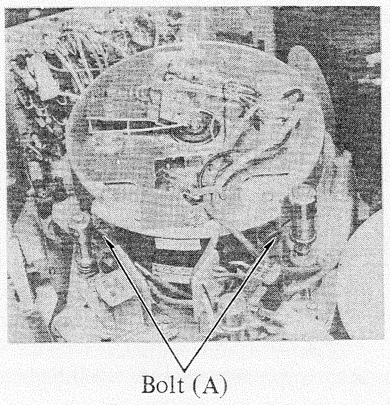


Fig. 53

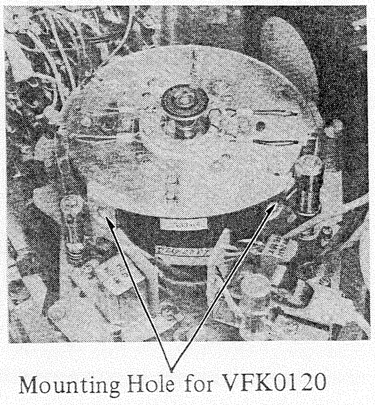

Mounting Hole for VFK0120

Fig. 54

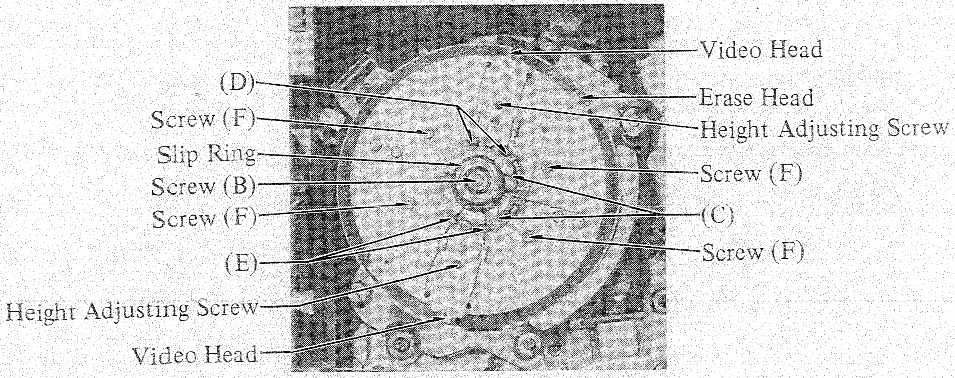

Video Head
(D)
Erase Head
Screw (F)
Height Adjusting Screw
Slip Ring
Screw (B)
Screw (F)
Screw (F)
(C)
(E)
Screw (F)
Height Adjusting Screw
Video Head

Fig. 55

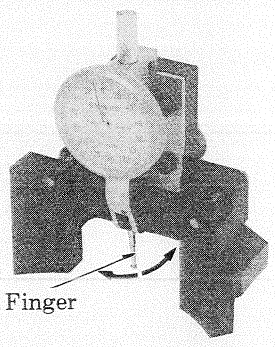


Fig. 56

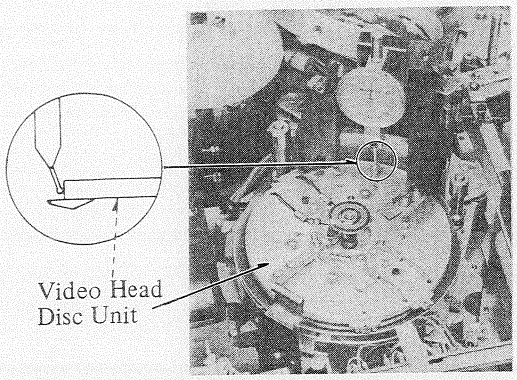

Video Head
Disc Unit

Fig. 57

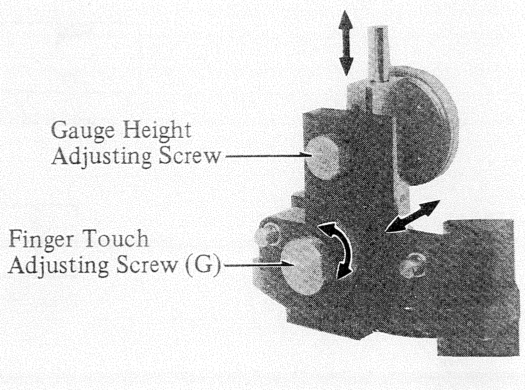

Gauge Height
Adjusting Screw
Finger Touch
Adjusting Screw (G)

Fig. 58

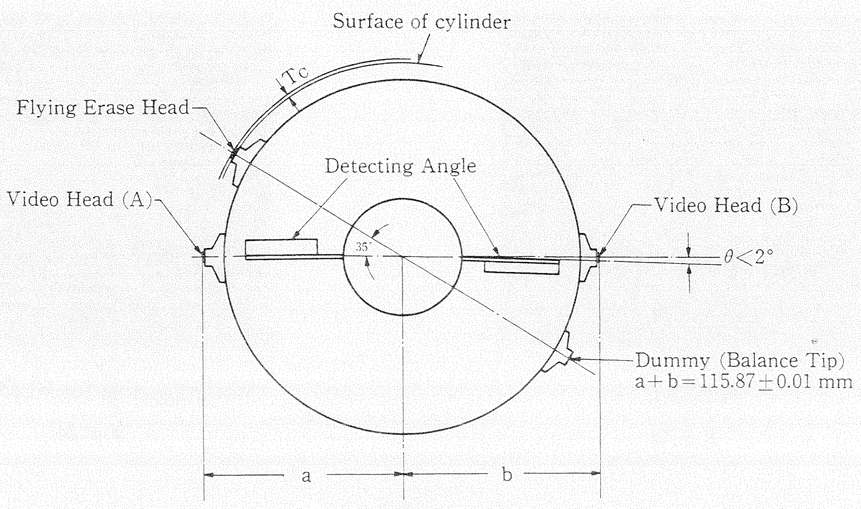
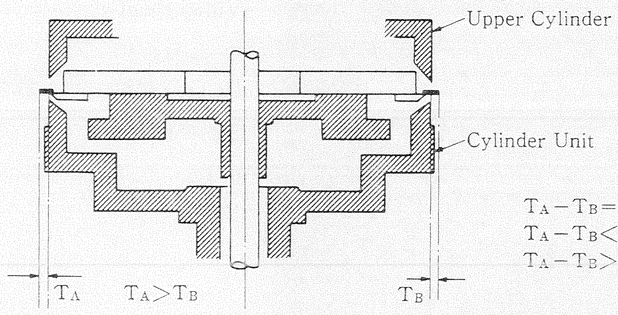

Surface of cylinder
Tc
Flying Erase Head
Detecting Angle
Video Head (A)
Video Head (B)
35°
θ<2°
Dummy (Balance Tip)
a+b=115.87±0.01 mm
a
b

Fig. 59


Upper Cylinder
Cylinder Unit
TA
TA>TB
TB

$T_A - T_B = 0$ Excellent
$T_A - T_B < 0.010$ mm good
$T_A - T_B > 0.010$ mm No good

Fig. 60

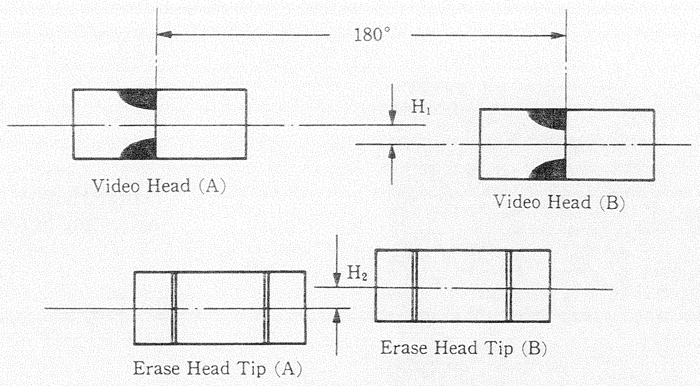

180°
H1
Video Head (A)
Video Head (B)
H2
Erase Head Tip (A)
Erase Head Tip (B)

Fig. 61

Specification of the video head & the flying erase head are as follows,

Spec. Subject	Video Head	Flying Erase Head
Protrusion (TA, TB, TC)	0.040 ~ 0.060 mm	0.030 ~ 0.050 mm
Difference of protrusion (TA-TB)	0.010 mm or less	0.010 mm or less (Reference Value)
Difference of height	$H_1 = 0.005$ mm	$H_2 = 0.010$ mm (Reference Value)

Head Cleaning

- * Remove the top panel, and make head cleaning with cleaning tape (NV-P500) or using the head cleaner (VFK27), wipe the video head tip horizontally.
- * Also, clean the portion on which the tape runs, such as the audio/control head and erase head completely.

HOW TO USE CLEANING TAPE (NV-P500)

1. Insert the cleaning tape into the cartridge VTR.
2. This tape will automatically rewind, stop and eject when cleaning is completed. (Cleaning period: approx. 60 sec.)

CAUTION:

1. Prolonged usage will effect video head life.
2. Do not attempt to record or playback using this cleaning tape.

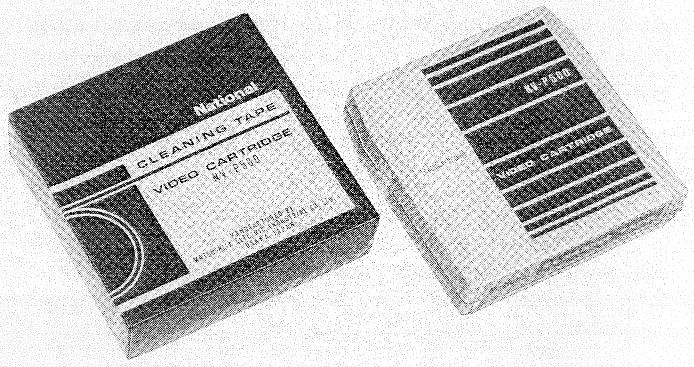


Fig. 62

Video Cartridge Tape

* Cautions in use

1. Video tape extremely susceptible to moisture, when preserving, cover it hermetically in a vinyl bag.
2. If a video tape is preserved in a place where magnetism exists, the video recording quality becomes unsatisfactory. Therefore, avoid placing it near a magnetic material and magnetic field.
3. The 30 minutes cartridge tape is special one designed for a cartridge VTR. Care should be taken that it may not be interchangeable when played on a CCIR/EIAJ open reel VTR.
4. If inserting the cartridge tape does not cause a change on the picture (miss-threading), check according to the instructions.

* Miss-threading

Causes

1) The leader tape (translucent tape) is not connected with the video tape.
2) The leader tape is bent.
3) The video tape or leader tape is entangled in the cartridge container.

Countermeasure

Disassemble the cartridge tape as follows.

1) Remove 4 screws and open the cartridge container.
2) Take out the cartridge tape.
3) Turn over the taken-out cartridge tape.
4) Pull the leader tape.
5) Re-assemble leader tape, the video tape, cartridge reel and cartridge container correctly.

Disassemblage of cartrige

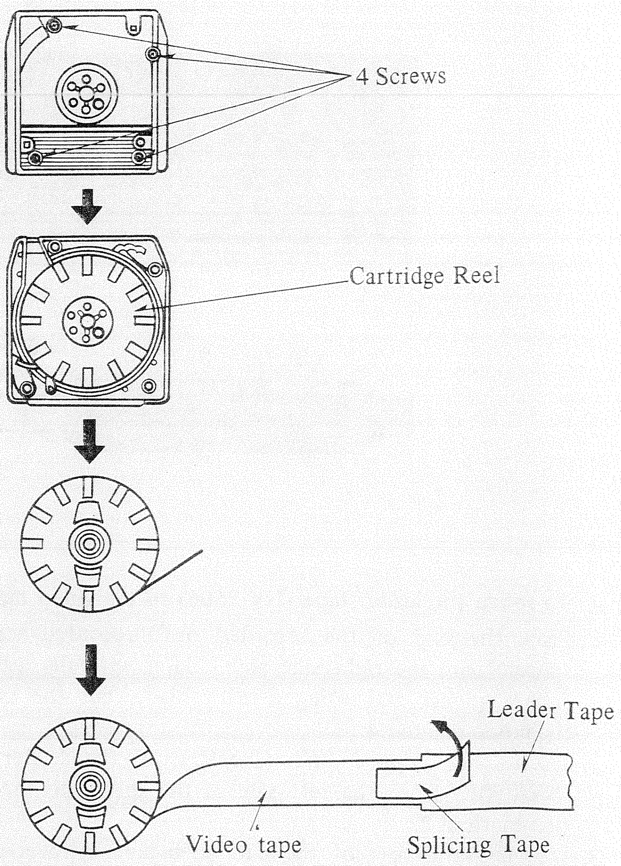


Fig. 63

Tape Conversion

Cartridges may be mechanically converted to open reels for use on any CCIR/EIAJ VTRs. Any tapes made on CCIR/EIAJ open reel VTRs may be mechanically converted to cartridges by using National optional accessories-leader tape (model NV-P506), trailer tape (model NV-P507), splicing tape (model NV-P508), tape splicer (model NV-B45) and cartridge tape container (model NV-B44).

CONVERSION OF CARTRIDGE TO OPEN REEL

1. Open up the cartridge.
2. Take out the tape with reel.
3. Cut off the leader tape.
4. Play the tape on CCIR/EIAJ open reel VTR.

CONVERSION OF OPEN REEL TO CARTRIDGE

1. Thread the open reel video tape on open reel VTR and fast forward it to the take-up reel. When completely taken up, take out the tape with takeup reel.
2. Splice the video tape and the trailer tape (NV-P507) as instructed below (B).
3. Using the open reel VTR, rewind the spliced tape to the cartridge reel (NV-R520). When completely rewound, take out the tape with cartridge reel.
4. Splice the video tape and the leader tape (NV-P506) as instructed below (A).
5. Put the spliced tape in the cartridge tape container (NV-B44) and screw it.

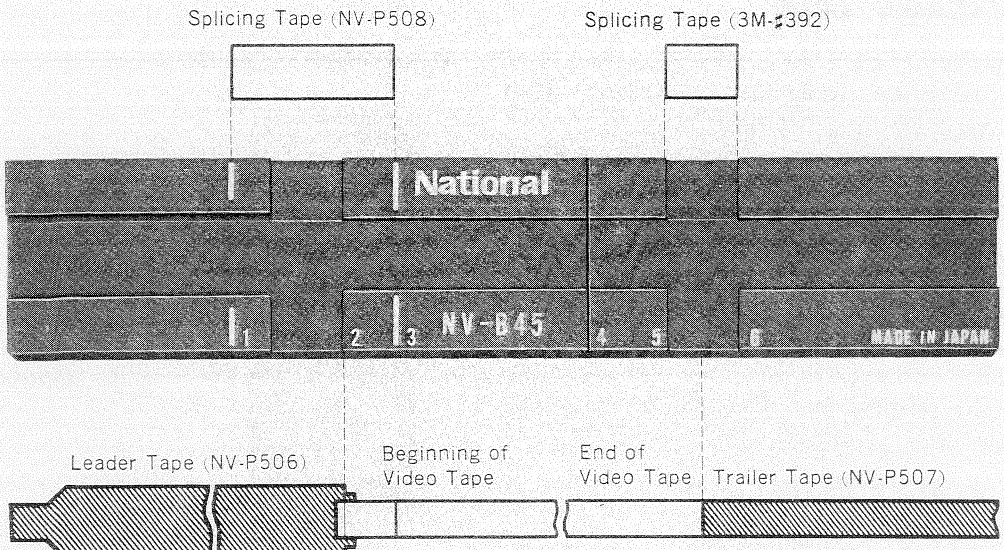


Fig. 64

A. To splice the leader tape (NV-P506) to the video tape:

1. Place the end of the recorded or unrecorded tape on splicer from the right side and hold it with the attached rubber pieces and using a razor blade, cut the tape at the point marked 4.
2. Insert the stepped end (shorter) or the leader tape (NV-P506) from the left side of the splicer to the position marked 2.
3. Join the end part of the cut video tape by overlapping about 6mm from the end of the leader tape, and hold the video tape with the rubber piece, and stick the specified splicing tape (NV-P508) on the entire space between marks 1 and 3 while taking care so that the splicing tape may not extend past the magnetic tape edge.

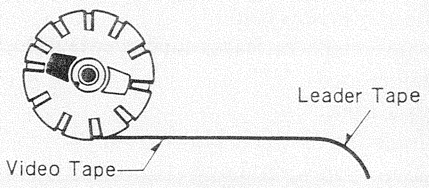


Fig. 65

IMPORTANT

The leader tape (NV-P506) is slightly bent, and the direction of this bend is very important when splicing. Be sure to splice the leader tape and the video tape as shown above.

4. Remove the rubber piece and pull out the joined part of the tapes to the left, turn it over and through the same procedure as above, stick the splicing tape on the backing side, too.

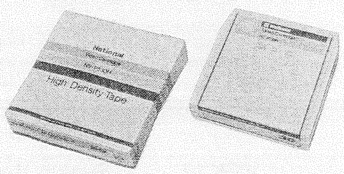
B. **To splice the trailer tape (NV-P507) and video tape:**

1. Cut the trailer tape and the video tape (recorded or unrecorded) at mark 4 rectangularly and exactly while holding them with the attached rubber pieces. The trailer tape is nearly equal to the video tape in width and thickness.
2. Before bonding, confirm the oxide and backing sides with care. Bond the trailer tape onto the backing side of the video tape (the side with no magnetic oxide coating).
3. Have the trailer tape and video tape meet together at the center of marks 5 and 6 on the right side of the splicer while taking care to prevent them from overlapping nor having a gap between them.

Note:
Use care to keep the backing side of the video tape up.

4. Hold both trailer tape and video tape with the rubber pieces and stick splicing tape (3M-#392) between marks 5 and 6 at a right angle to the video tape.
5. Remove the rubber peices and the joined tape from the splicer and cut splicing tape portion extending from the edge of the video tape in such a way that the splicing tape will not be larger than the video tape in width.

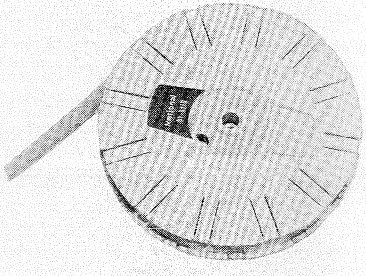
Note:
On the trailer tape, there are marks at intervals of 15cm.



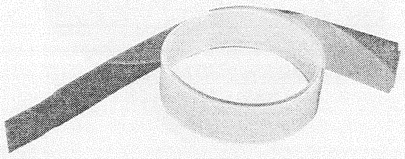
NV-P530H

National
CONTAINER
VIDEO CARTRIDGE
National
VIDEO CARTRIDGE

NV-B44



NV-R520



NV-P506

National
TRAILER TAPE
MODEL NV-P507

NV-P507

National
SPLICING TAPE
MODEL NV-P508

NV-P508

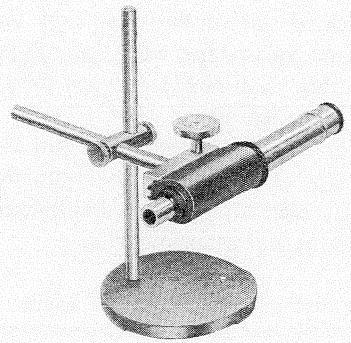
NOTES:

1. Before splicing, clean splicer and hands because dust, dirt, etc. sticking on the magnetic tape surface may cause a dropout.
2. Use only the specified National leader tape (NV-P506), trailer tape (NV-P507) and splicing tape (NV-P508) since the thickness, size, end form, translucency, bonding strength, etc. are important factors.
3. The leader tape is to be joined at the beginning of the video tape, and the trailer tape at the end portion of the video tape.
4. When installing a reel (NV-R520) in cartridge container (NV-B44), on which video tape with a leader and trailer tape is wound, make sure that the brake, tape control lever etc. work properly and then assemble with screws.
5. After placing the reel in the cartridge container, rotate the reel in the reverse direction 2 ~ 3 times by hand and make sure that it turns smoothly.

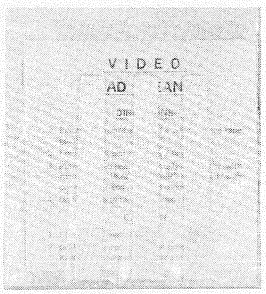
GENERAL NOTES

1. Do not block the ventilation slits on the rear and bottom panels.
2. Do not put anything on this unit.
3. Place this unit horizontally.
4. Do not insert fingers or any object into the video cartridge compartment.
5. Avoid operating or leaving this unit in hot, cold or damp place, or in magnetic field.
6. Remove the cartridge when carrying this unit.

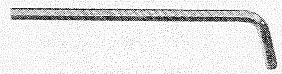
SERVICING EQUIPMENTS



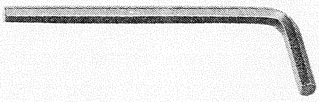
VFK6
Microscope w/stand



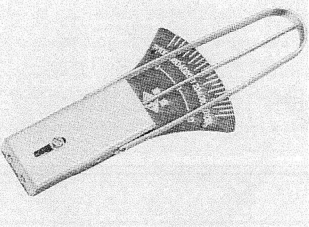
VFK27
Head Cleaner



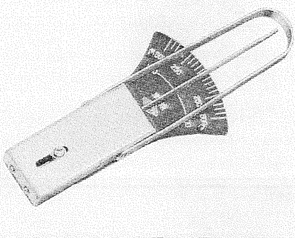
VFK48 (=2.6mm)
Hex Wrench



VFK50 (=4.0mm)
Hex Wrench

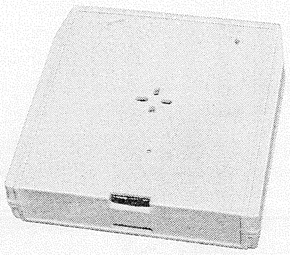


VFK62 Fan Type
Tension Gauge 100gr.

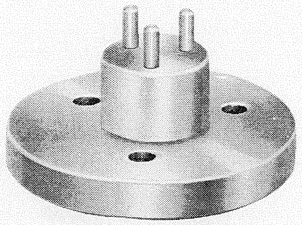


VFK63 Fan Type
Tension Gauge 500gr

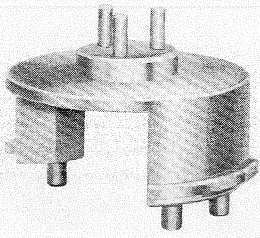
VFK69
Torque Gauge



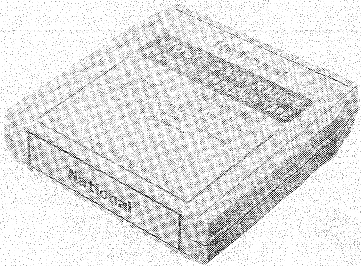
VFK72 Supply Reel
Adjustment Cartridge Tape



VFK73 Supply Reel Torque
Measurement Adaptor

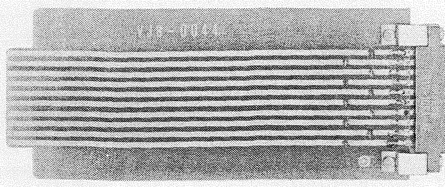


VFK74 Takeup Reel Torque
Measurement Adaptor

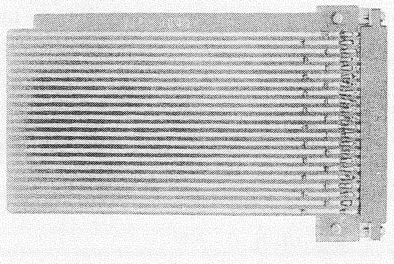


VFM5180
Reference Test Tape

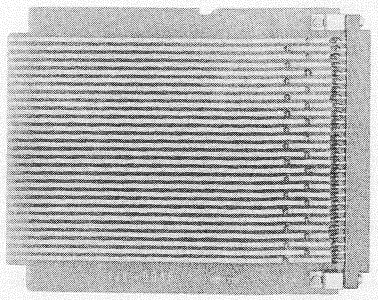
EXTENSION BOARD FOR ELECTRICAL MEASUREMENT



VFK0087
For REC AMP & HEAD AMP CIRCUIT
BOARD (VEP0525B)

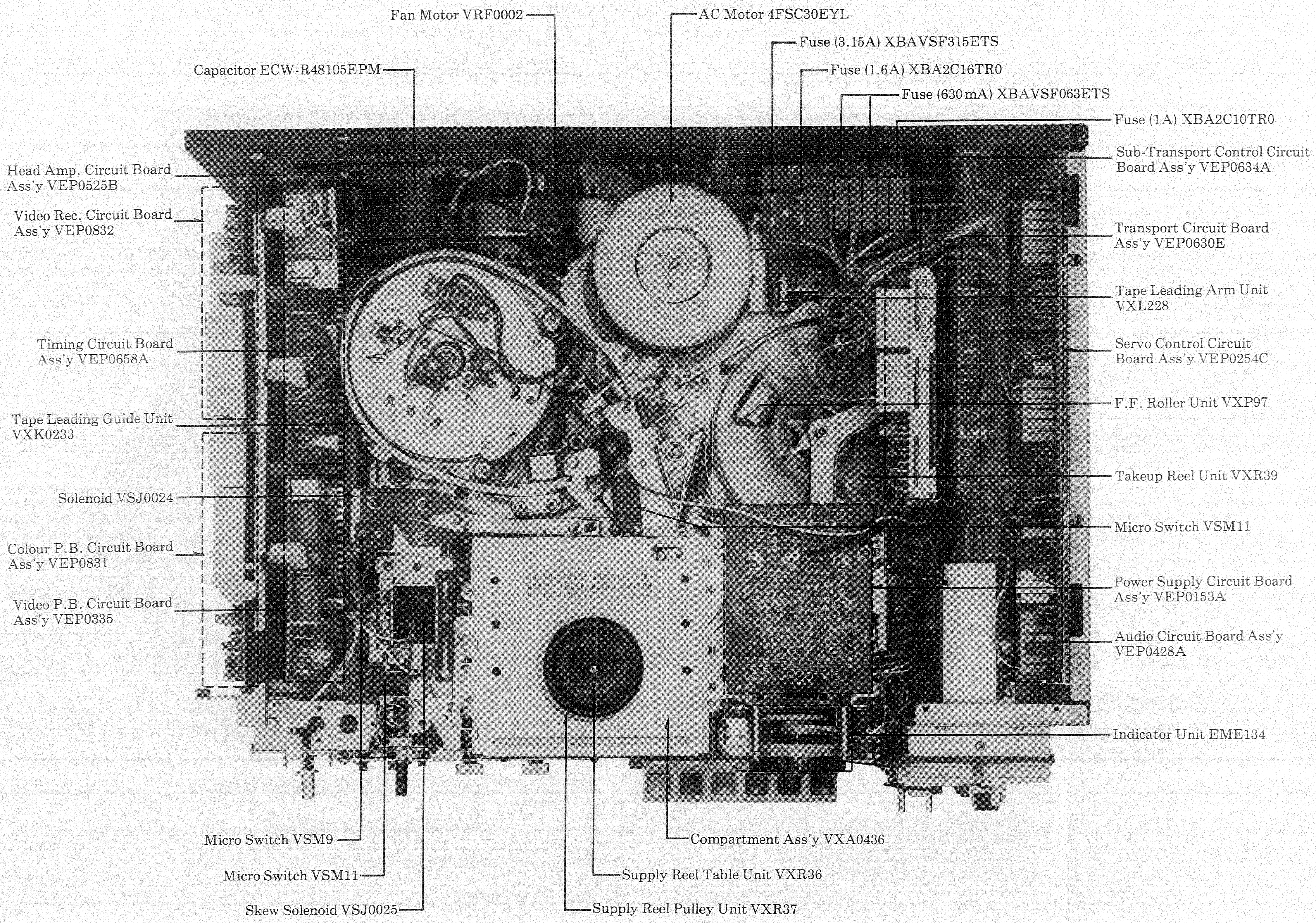


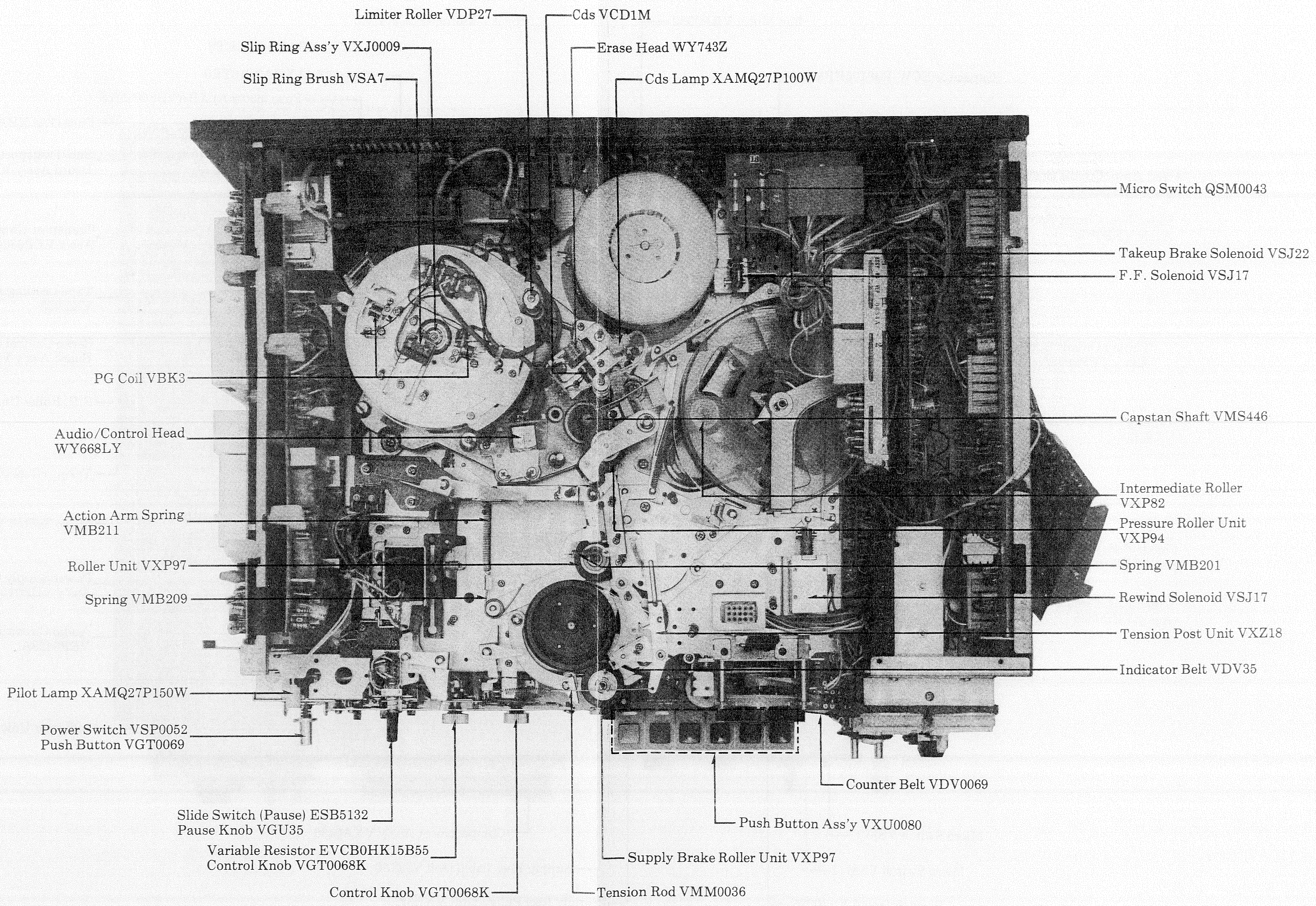
VFK0088
For VIDEO REC. CIRCUIT BOARD
(VEP0832A)
VIDEO P.B. CIRCUIT BOARD
(VEP0335A)
COLOR P.B. CIRCUIT BOARD
(VEP0831A)
SERVO CONTROL CIRCUIT BOARD
(VEP0241B)

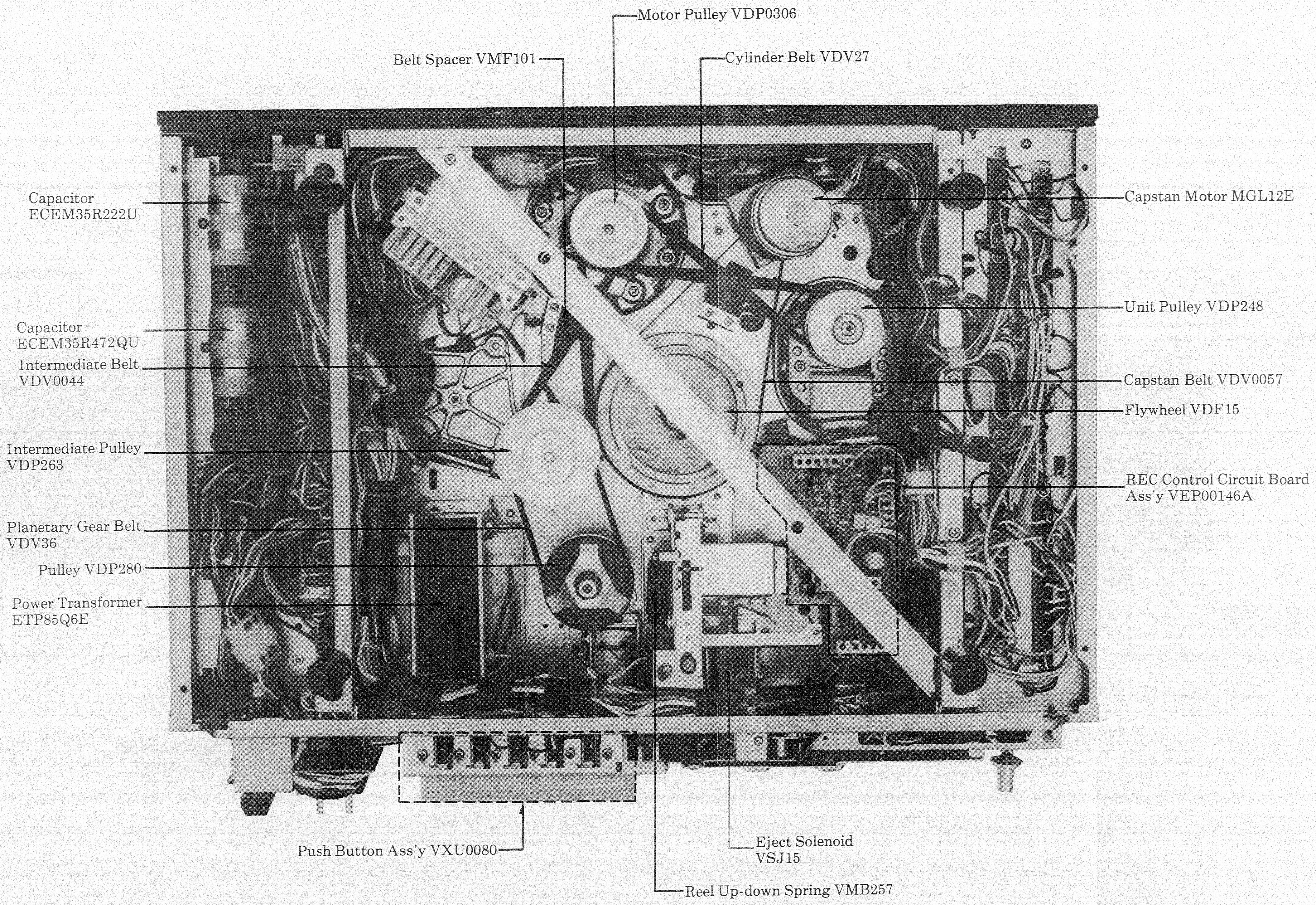


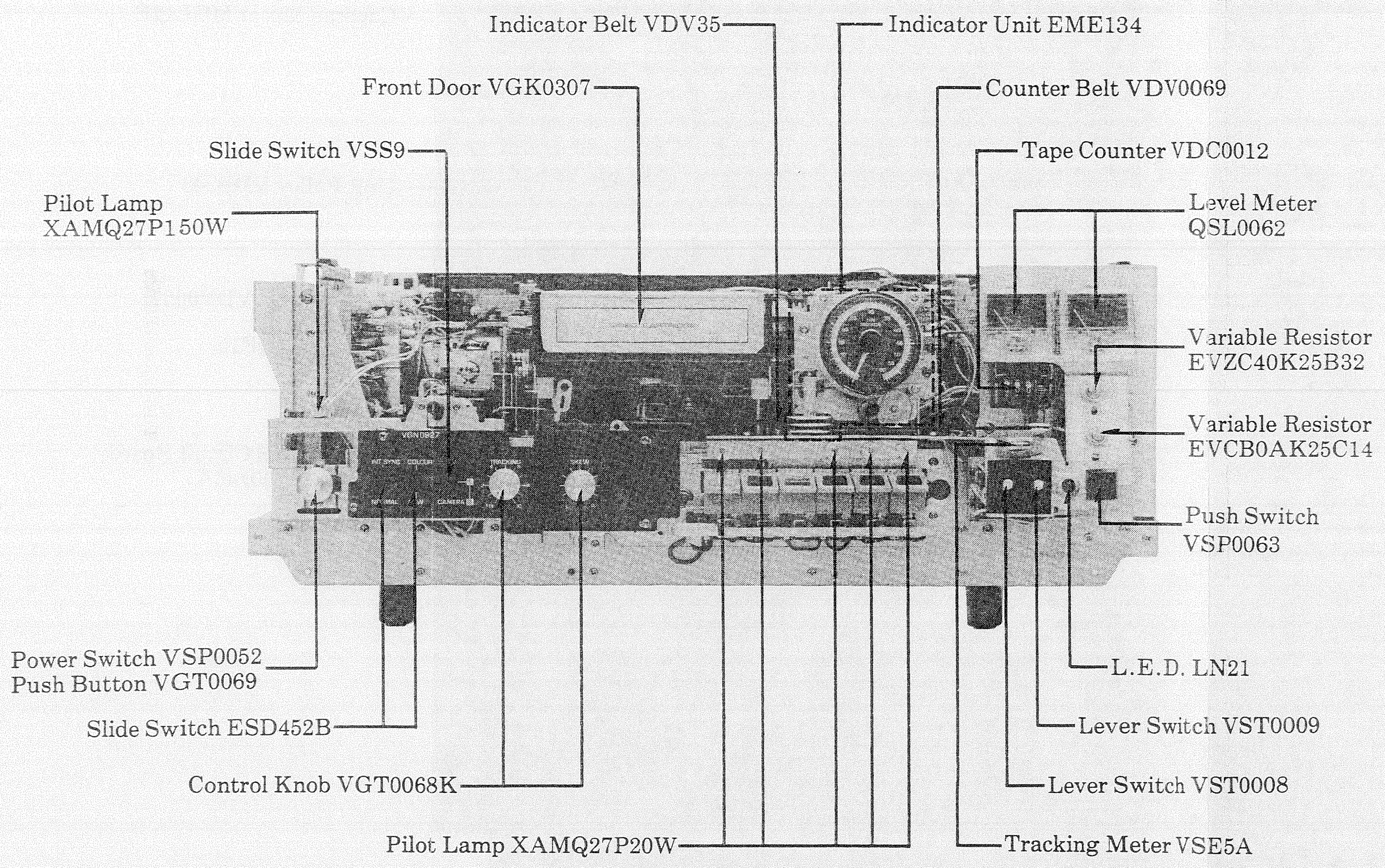
VFK0089
For TRANSPORT CIRCUIT BOARD
(VEP0630A)

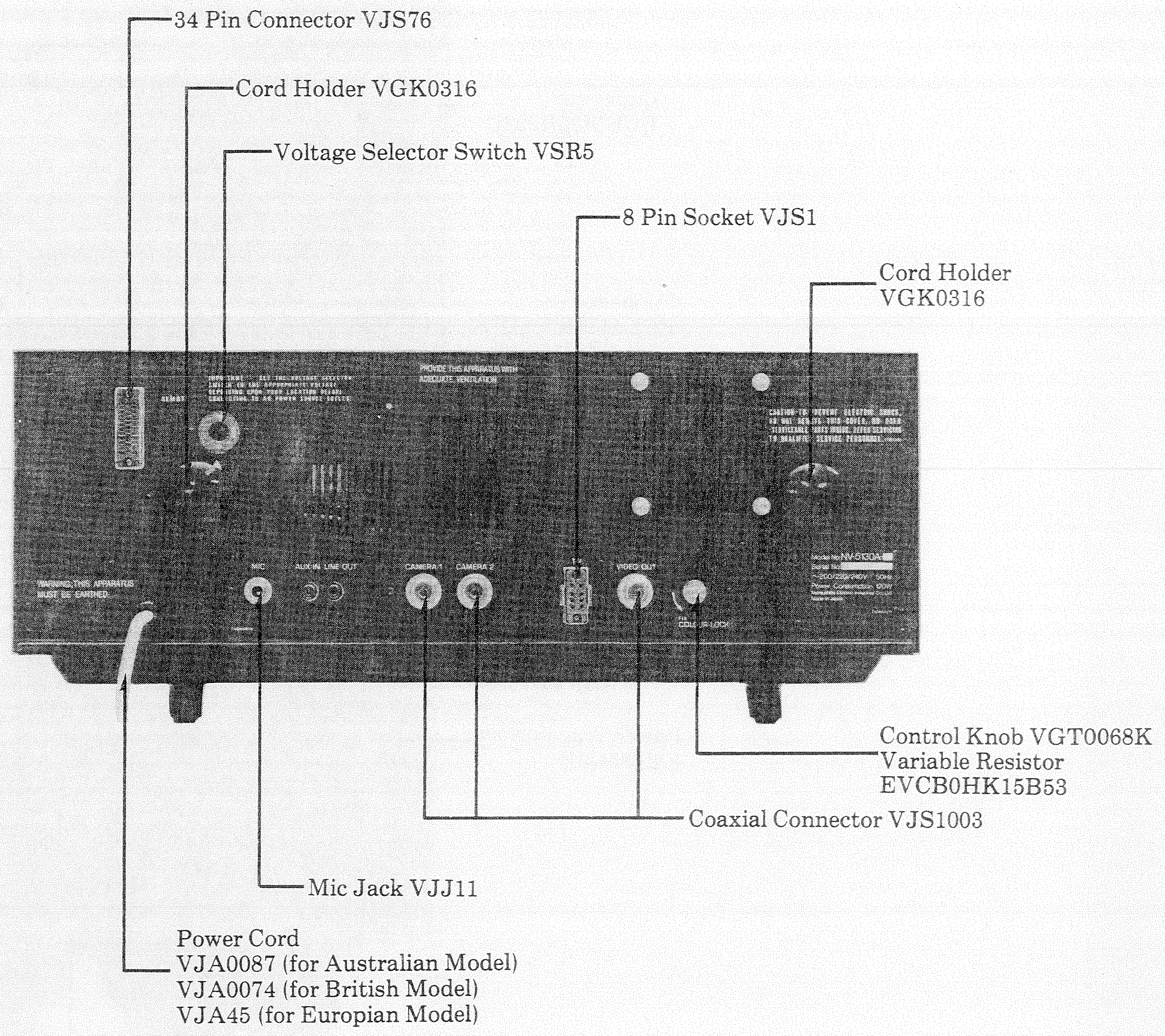
INNER PART LOCATION


Fan Motor VRF0002
AC Motor 4FSC30EYL
Fuse (3.15A) XBAVSF315ETS
Capacitor ECW-R48105EPM
Fuse (1.6A) XBA2C16TR0
Fuse (630 mA) XBAVSF063ETS
Fuse (1A) XBA2C10TR0
Head Amp. Circuit Board Ass'y VEP0525B
Sub-Transport Control Circuit Board Ass'y VEP0634A
Video Rec. Circuit Board Ass'y VEP0832
Transport Circuit Board Ass'y VEP0630E
Tape Leading Arm Unit VXL228
Timing Circuit Board Ass'y VEP0658A
Servo Control Circuit Board Ass'y VEP0254C
F.F. Roller Unit VXP97
Tape Leading Guide Unit VXK0233
Takeup Reel Unit VXR39
Solenoid VSJ0024
Micro Switch VSM11
Colour P.B. Circuit Board Ass'y VEP0831
Power Supply Circuit Board Ass'y VEP0153A
Video P.B. Circuit Board Ass'y VEP0335
Audio Circuit Board Ass'y VEP0428A
Indicator Unit EME134
DO NOT TOUCH SOLENOID CIRCUITS THESE BEING DRIVEN BY AC 100V
Micro Switch VSM9
Compartment Ass'y VXA0436
Micro Switch VSM11
Supply Reel Table Unit VXR36
Skew Solenoid VSJ0025
Supply Reel Pulley Unit VXR37

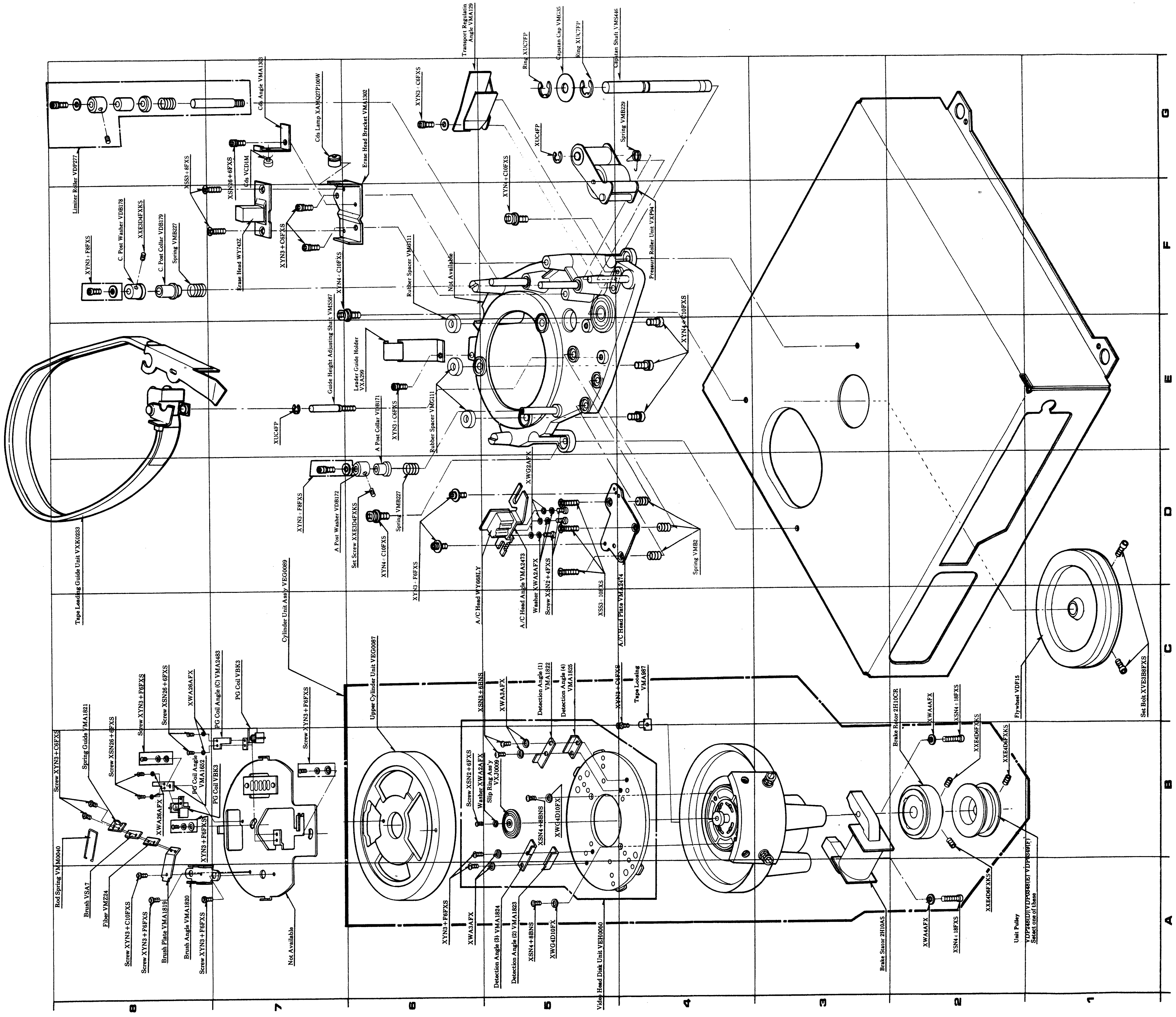

Limiter Roller VDP27
Cds VCD1M
Slip Ring Ass'y VXJ0009
Erase Head WY743Z
Slip Ring Brush VSA7
Cds Lamp XAMQ27P100W
Micro Switch QSM0043
Takeup Brake Solenoid VSJ22
F.F. Solenoid VSJ17
PG Coil VBK3
Capstan Shaft VMS446
Audio/Control Head WY668LY
Intermediate Roller VXP82
Action Arm Spring VMB211
Pressure Roller Unit VXP94
Roller Unit VXP97
Spring VMB201
Spring VMB209
Rewind Solenoid VSJ17
Tension Post Unit VXZ18
Indicator Belt VDV35
Pilot Lamp XAMQ27P150W
Power Switch VSP0052
Push Button VGT0069
Counter Belt VDV0069
Slide Switch (Pause) ESB5132
Pause Knob VGU35
Push Button Ass'y VXU0080
Variable Resistor EVCB0HK15B55
Control Knob VGT0068K
Supply Brake Roller Unit VXP97
Control Knob VGT0068K
Tension Rod VMM0036


Motor Pulley VDP0306
Belt Spacer VMF101
Cylinder Belt VDV27
Capacitor ECEM35R222U
Capstan Motor MGL12E
Unit Pulley VDP248
Capacitor ECEM35R472QU
Intermediate Belt VDV0044
Capstan Belt VDV0057
Flywheel VDF15
Intermediate Pulley VDP263
REC Control Circuit Board Ass'y VEP00146A
Planetary Gear Belt VDV36
Pulley VDP280
Power Transformer ETP85Q6E
Push Button Ass'y VXU0080
Eject Solenoid VSJ15
Reel Up-down Spring VMB257


Indicator Belt VDV35
Indicator Unit EME134
Front Door VGK0307
Counter Belt VDV0069
Slide Switch VSS9
Tape Counter VDC0012
Pilot Lamp XAMQ27P150W
Level Meter QSL0062
Variable Resistor EVZC40K25B32
Variable Resistor EVCB0AK25C14
Push Switch VSP0063
Power Switch VSP0052
Push Button VGT0069
L.E.D. LN21
Slide Switch ESD452B
Lever Switch VST0009
Control Knob VGT0068K
Lever Switch VST0008
Pilot Lamp XAMQ27P20W
Tracking Meter VSE5A


34 Pin Connector VJS76
Cord Holder VGK0316
Voltage Selector Switch VSR5
8 Pin Socket VJS1
Cord Holder VGK0316
Control Knob VGT0068K
Variable Resistor EVCB0HK15B53
Coaxial Connector VJS1003
Mic Jack VJJ11
Power Cord
VJA0087 (for Australian Model)
VJA0074 (for British Model)
VJA45 (for Europian Model)

EXPLODED VIEW


Limiter Roller VDP277
XYN3+F8FXS
C. Post Washer VDB178
XXE3D4FXKS
C. Post Collar VDB179
Spring VMB227
Erase Head WY742Z
XSN26+6FXS
Cds VCD1M
XSS3+8FXS
Cds Angle VMA1302
XYN3+C8FXS
Cds Lamp XAMQ277P100W
Erase Head Bracket VMA1302
XYN4+C10FXS
Transport Regulatin Angle VMA129
XYN3+C6FXS
Ring XUC7FP
Capstan Cap VMG16
Ring XUC7FP
Capstan Shaft VMS446
XUC4FP
Spring VMB229
XYN4+C10FXS
Pressure Roller Unit VXP947
Rubber Spacer VMG111
Not Available
XYN4+C10FXS
Guide Height Adjusting Shaft VMS587
Leader Guide Holder VXA299
XUC4FP
A Post Collar VDB171
XYN3+C6FXS
Rubber Spacer VMG111
XYN3+F8FXS
A Post Washer VDB172
Set Screw XXE3D4FXKS
XYN4+C10FXS
Spring VMB227
XWG2AFX
XYN3+F6FXS
A/C Head WY668LY
A/C Head Angle VMA2473
Washer XWA2AFX
Screw XSN2+4FXS
XSS3+10FXS
A/C Head Plate VMA2474
Spring VMB2
Tape Loading Guide Unit VXK0233
Cylinder Unit Ass'y VEG0089
Upper Cylinder Unit VEG0087
Flywheel VDF15
Set Bolt XVE3B8FXS
Rod Spring VMM0040
Brush VSA7
Fiber VMZ24
Screw XYN3+C10FXS
Screw XYN3+F8FXS
Brush Plate VMA1819
Brush Angle VMA1820
Screw XYN3+F6FXS
Not Available
Screw XYN3+C6FXS
Spring Guide VMA1821
Screw XSN26+6FXS
Screw XYN3+F8FXS
Screw XSN26+6FXS
XWA26AFX
PG Coil Angle (C) VMA2483
PG Coil VBK3
XWA26AFX
PG Coil Angle VMA1852
PG Coil VBK3
XYN3+F6FXS
Screw XYN3+F8FXS
XSN3+8BNS
XWA3AFX
Detection Angle (1) VMA1822
Detection Angle (4) VMA1825
XYN3+C6FXS
Tape Loading VMA987
Screw XSN2+6FXS
Washer XWA2AFX
Slip Ring Ass'y VXJ0009
XSN4+8BNS
XWG4D10FX
XYN3+F8FXS
XWA3AFX
Detection Angle (3) VMA1824
Detection Angle (2) VMA1823
XSN4+8BNS
XWG4D10FX
Video Head Disk Unit VEH0050
Brake Rotor 2H10CR
XWA4AFX
XSN4+18FXS
XXE4D6FXKS
XXE4D6FXKS
Brake Stator 2H10AS
XWA4AFX
XSN4+18FXS
XXE4D6FXKS
Unit Pulley
Select one of these
A
B
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1
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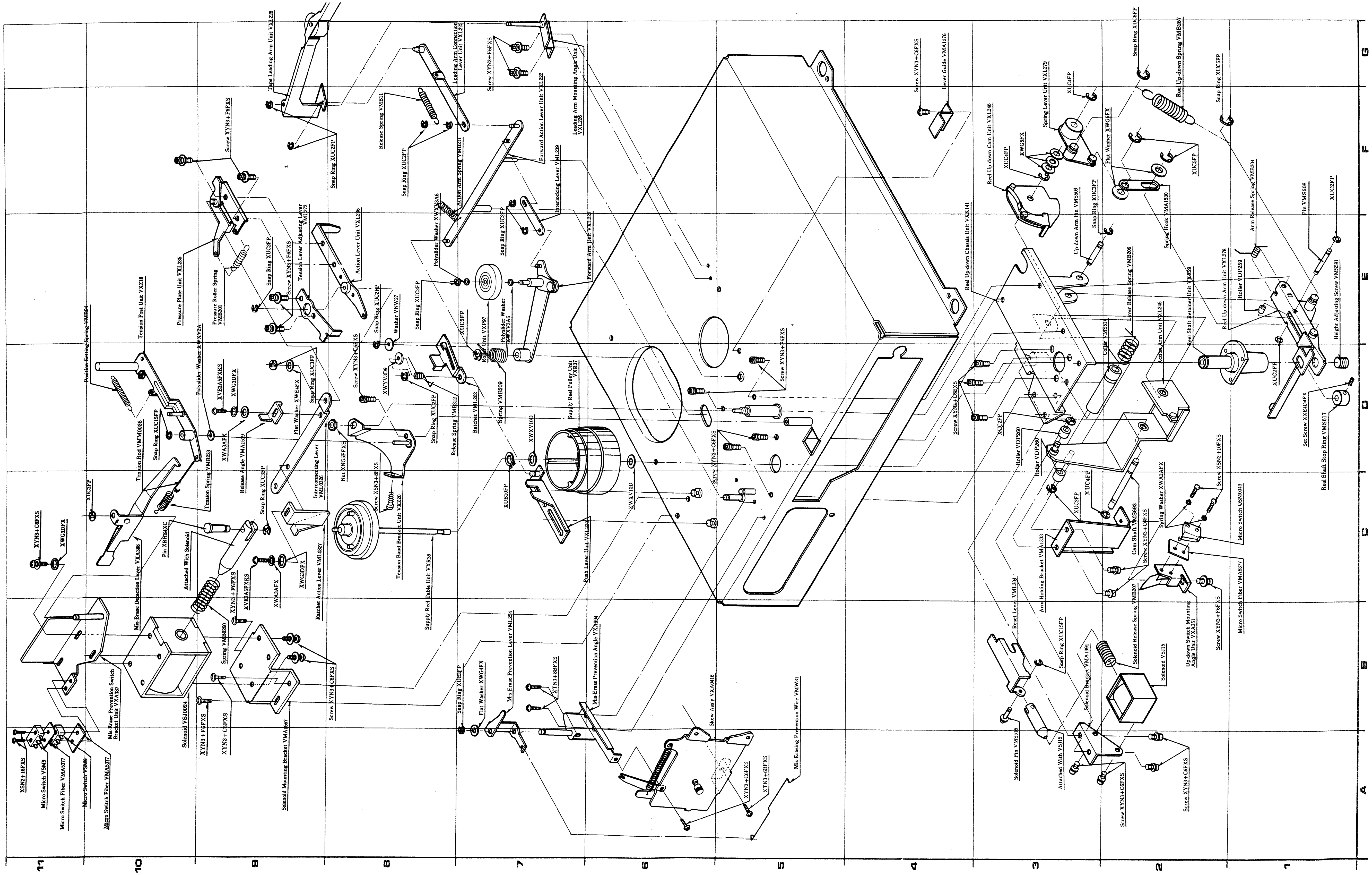
Tape Leading Arm Unit VXL228
Leading Arm Connection Lever Unit VXL223
Screw XYN3+F6FXS
Leading Arm Mounting Angle Unit VXL226
Forward Action Lever Unit VXL222
Interlocking Lever VML229
Action Arm Spring VMB211
Release Spring VMB11
Snap Ring XUC2FP
Snap Ring XUC2FP
Snap Ring XUC2FP
Screw XYN3+F6FXS
Pressure Plate Unit VXL235
Pressure Roller Spring VMB201
Tension Lever Adjusting Lever VML273
Screw XYN3+F6FXS
Snap Ring XUC2FP
Action Lever Unit VXL236
Polyslider Washer XWXY3A6
Forward Arm Unit VXL222
Tension Post Unit VXZ18
Position Setting Spring VMB94
Polyslider Washer XWXY2A
XVEBA5FXKS
XWG3DFX
Snap Ring XUC3FP
Washer VNW27
Snap Ring XUC2FP
Screw XYN3+C6FXS
XUC2FP
Roller Unit VXP97
Polyslider Washer XWXY3A6
Spring VMB209
Supply Reel Pulley Unit VXR37
Tension Rod VMM0036
Snap Ring XUC15FP
XWA3AFX
Release Angle VMA159
Flat Washer XWE4FX
XWYY3D9
Snap Ring XUC2FP
Release Spring VMB212
Ratchet VML262
XWXV10D
Tension Spring VMB233
Snap Ring XUC3FP
Interconnecting Lever VML0326
Nut XNG5FFXS
Screw XSN3+8FXS
Tension Band Bracket Unit VXZ20
XUR10FP
Push Lever Unit VXL283
XWXV10D
Screw XYN3+C6FXS
Screw XYN3+F6FXS
XUC3FP
XYN3+C6FXS
XWG3DFX
Pin XRE4XC
Attached With Solenoid
Mis Erase Detection Lever VXA388
XVEBA5FXKS
XWA3AFX
XWG3DFX
Ratchet Action Lever VML0327
Supply Reel Table Unit VXR36
XYN3+F8FXS
Spring VMB0260
Screw XYN3+C6FXS
Mis Erase Prevention Switch Bracket Unit VXA387
Solenoid VSJ0024
XYN3+F6FXS
XYN3+C6FXS
Solenoid Mounting Bracket VMA1567
XSN2+16FXS
Micro Switch VSM9
Micro Switch Fiber VMA5377
Micro Switch VSM9
Micro Switch Fiber VMA5377
Snap Ring XUC2FP
Flat Washer XWG4FX
Mis Erase Prevention Lever VML254
XTN3+8BFXS
Mis Erase Prevention Angle VXA394
Skew Ass'y VXA0416
Mis Erasing Prevention Wire VMW31
XYN3+C6FXS
XTN3+8BFXS
Screw XYN3+C6FXS
Lever Guide VMA1276
Reel Up-down Cam Unit VXL246
XUC4FP
XWG6FX
Spring Lever Unit VXL279
XUC4FP
Flat Washer XWG6FX
Snap Ring XUC5FP
Reel Up-down Spring VMB207
Snap Ring XUC5FP
XUC5FP
Up-down Arm Pin VMS509
Snap Ring XUC3FP
Spring Hook VMA1530
Arm Release Spring VMB204
Pin VMS508
XUC2FP
Reel Up-down Chassis Unit VXK141
Lever Release Spring VMB206
Reel Shaft Retainer Unit VXK29
Reel Up-down Arm Unit VXL278
Roller VDP259
Height Adjusting Screw VMS591
Collar VMS514
Action Arm Unit VXL245
Screw XYN3+C6FXS
XUC2FP
Roller VDP260
Roller VDP260
XUC4FP
XUC2FP
Cam Shaft VMS693
Screw XYN3+C4FXS
Spring Washer XWA2AFX
Screw XSN2+10FXS
Micro Switch QSM0043
XUC2FP
Set Screw XXE4D4FX
Reel Shaft Stop Ring VMS617
Arm Holding Bracket VMA1333
Reset Lever VML304
Snap Ring XUC15FP
Solenoid Release Spring VMB207
Micro Switch Fiber VMA5377
Up-down Switch Mounting Angle Unit VXA351
Screw XYN3+F6FXS
Solenoid Bracket VMA1391
Solenoid VSJ15
Solenoid Pin VMS536
Attached With VSJ15
Screw XYN3+C6FXS
Screw XYN3+C6FXS
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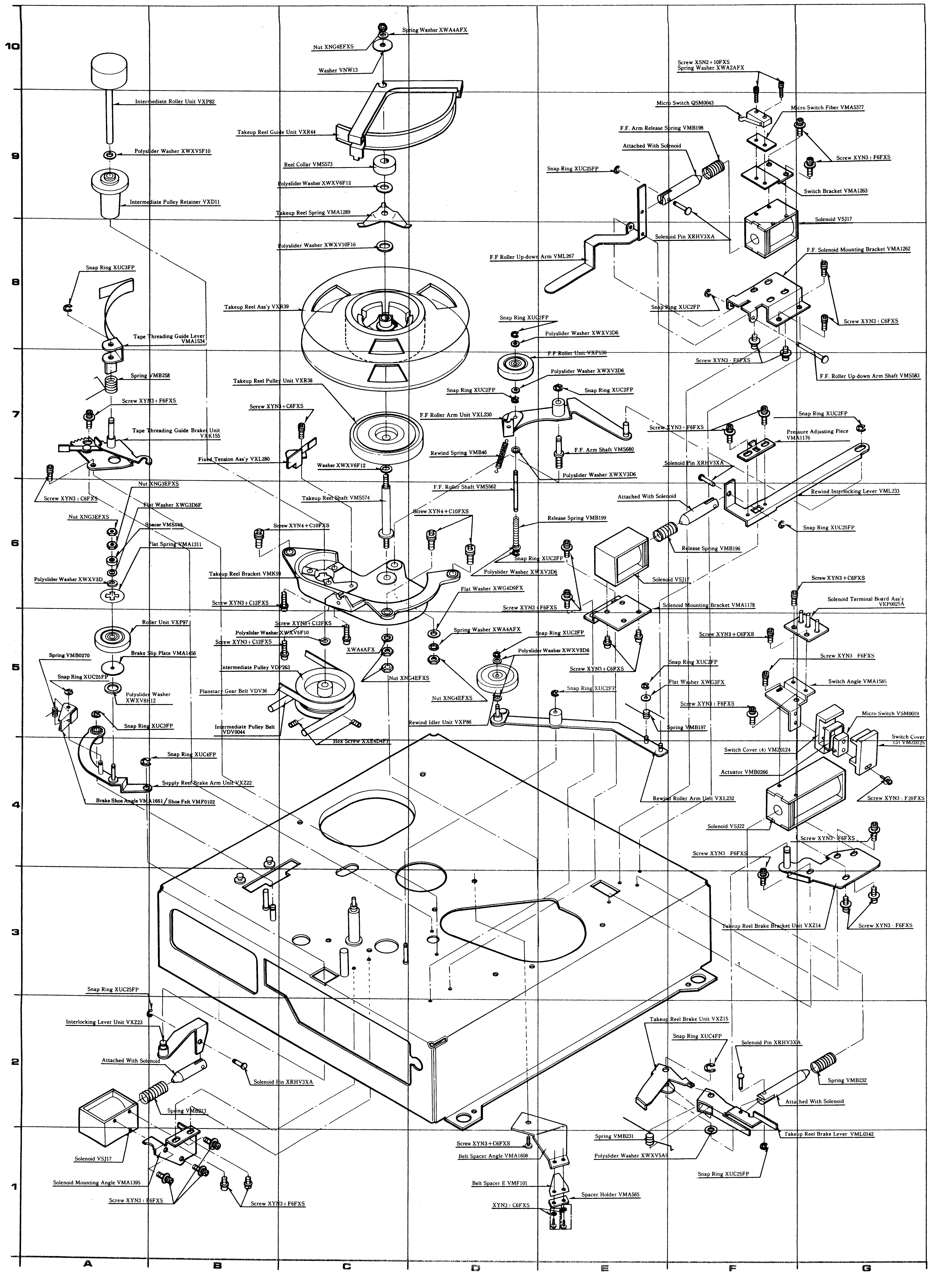
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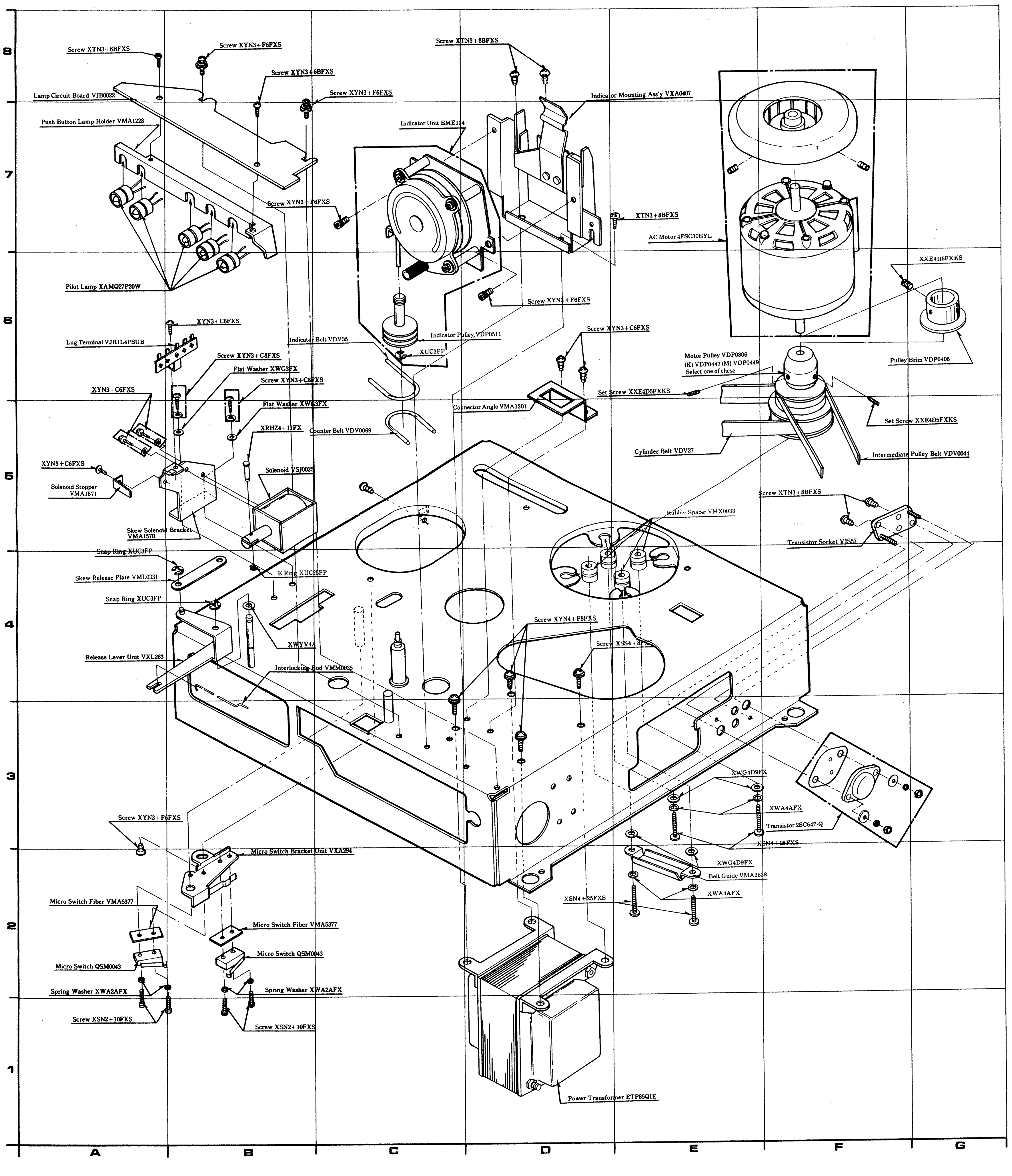
G
Spring Washer XWA4AFX
Nut XNG4EFXS
Washer VNW13
Screw XSN2+10FXS
Spring Washer XWA2AFX
Intermediate Roller Unit VXP82
Takeup Reel Guide Unit VXR44
Micro Switch QSM0043
Micro Switch Fiber VMA5377
F.F. Arm Release Spring VMB198
Attached With Solenoid
Polyslider Washer XWXV5F10
Reel Collar VMS573
Snap Ring XUC25FP
Screw XYN3+F6FXS
Polyslider Washer XWXV6F12
Switch Bracket VMA1263
Intermediate Pulley Retainer VXD11
Takeup Reel Spring VMA1289
Solenoid VSJ17
Solenoid Pin XRHV3XA
Polyslider Washer XWXV10F16
F.F Roller Up-down Arm VML267
F.F. Solenoid Mounting Bracket VMA1262
Snap Ring XUC3FP
Takeup Reel Ass'y VXR39
Snap Ring XUC2FP
Snap Ring XUC2FP
Screw XYN3+C6FXS
Polyslider Washer XWXV3D6
Tape Threading Guide Lever VMA1534
F.F Roller Unit VXP130
Screw XYN3+F6FXS
Polyslider Washer XWXV3D6
F.F. Roller Up-down Arm Shaft VMS583
Takeup Reel Pulley Unit VXR38
Spring VMB258
Snap Ring XUC2FP
Snap Ring XUC2FP
Screw XYN3+F6FXS
Screw XYN3+C6FXS
F.F Roller Arm Unit VXL230
Snap Ring XUC2FP
Screw XYN3+F6FXS
Pressure Adjusting Piece VMA1176
Tape Threading Guide Braket Unit VXK155
Fixed Tension Ass'y VXL280
Rewind Spring VMB46
F.F. Arm Shaft VMS680
Washer XWXV6F12
Solenoid Pin XRHV3XA
Polyslider Washer XWXV3D6
Nut XNG3EFXS
Screw XYN3+C6FXS
F.F. Roller Shaft VMS562
Rewind Interlocking Lever VML233
Takeup Reel Shaft VMS574
Attached With Solenoid
Flat Washer XWG3D6F
Nut XNG3EFXS
Spacer VMS545
Screw XYN4+C10FXS
Screw XYN4+C10FXS
Snap Ring XUC25FP
Release Spring VMB199
Flat Spring VMA1311
Release Spring VMB196
Snap Ring XUC2FP
Takeup Reel Bracket VMK93
Polyslider Washer XWXV3D6
Polyslider Washer XWXV3D
Solenoid VSJ17
Screw XYN3+C6FXS
Flat Washer XWG4D9FX
Screw XYN3+C12FXS
Screw XYN3+F6FXS
Solenoid Mounting Bracket VMA1178
Solenoid Terminal Board Ass'y VEP0025A
Roller Unit VXP97
Screw XYN3+C12FXS
Spring Washer XWA4AFX
Polyslider Washer XWXV5F10
Snap Ring XUC2FP
Screw XYN3+C6FXS
Screw XYN3+C12FXS
XWA4AFX
Polyslider Washer XWXV3D6
Brake Slip Plate VMA1456
Intermediate Pulley VDP263
Spring VMB0270
Nut XNG4EFXS
Screw XYN3+C6FXS
Screw XYN3 F6FXS
Snap Ring XUC2FP
Snap Ring XUC25FP
Snap Ring XUC2FP
Flat Washer XWG3FX
Switch Angle VMA1585
Planetary Gear Belt VDV36
Polyslider Washer XWXV8H12
Nut XNG4EFXS
Screw XYN3+F6FXS
Micro Switch VSM0019
Spring VMB197
Snap Ring XUC3FP
Intermediate Pulley Belt VDV0044
Rewind Idler Unit VXP86
Switch Cover (5) VMZ0125
Hex Screw XXE4D4FP
Switch Cover (4) VMZ0124
Snap Ring XUC4FP
Actuator VMB0266
Supply Reel Brake Arm Unit VXZ22
Rewind Roller Arm Unit VXL232
Screw XYN3 F20FXS
Brake Shoe Angle VMA1651/Shoe Felt VMF0102
Solenoid VSJ22
Screw XYN3 F6FXS
Screw XYN3 F6FXS
Takeup Reel Brake Bracket Unit VXZ14
Screw XYN3 F6FXS
Snap Ring XUC25FP
Interlocking Lever Unit VXZ23
Takeup Reel Brake Unit VXZ15
Snap Ring XUC4FP
Solenoid Pin XRHV3XA
Attached With Solenoid
Solenoid Pin XRHV3XA
Spring VMB232
Attached With Solenoid
Spring VMB213
Takeup Reel Brake Lever VML0342
Spring VMB231
Screw XYN3+C6FXS
Solenoid VSJ17
Belt Spacer Angle VMA1608
Polyslider Washer XWXV5A9
Snap Ring XUC25FP
Solenoid Mounting Angle VMA1395
Belt Spacer E VMF101
Spacer Holder VMA565
Screw XYN3+F6FXS
Screw XYN3+F6FXS
XYN3+C6FXS


Screw XTN3+6BFXS
Screw XYN3+F6FXS
Screw XYN3+6BFXS
Screw XYN3+F6FXS
Lamp Circuit Board VJB0022
Push Button Lamp Holder VMA1228
Screw XYN3+F6FXS
Pilot Lamp XAMQ27P20W
XYN3+C6FXS
Lug Terminal VJR1L4PSUB
Screw XYN3+C8FXS
Flat Washer XWG3FX
Screw XYN3+C8FXS
Flat Washer XWG3FX
XYN3+C6FXS
XRHZ4+11FX
XYN3+C6FXS
Solenoid Stopper VMA1571
Solenoid VSJ0025
Skew Solenoid Bracket VMA1570
Snap Ring XUC3FP
Skew Release Plate VML0331
E Ring XUC25FP
Snap Ring XUC3FP
XWYV4A
Release Lever Unit VXL283
Interlocking Rod VMM0035
Screw XYN3+F6FXS
Micro Switch Bracket Unit VXA294
Micro Switch Fiber VMA5377
Micro Switch Fiber VMA5377
Micro Switch QSM0043
Micro Switch QSM0043
Spring Washer XWA2AFX
Spring Washer XWA2AFX
Screw XSN2+10FXS
Screw XSN2+10FXS
Screw XTN3+8BFXS
Indicator Mounting Ass'y VXA0407
Indicator Unit EME134
XTN3+8BFXS
AC Motor 4FSC30EYL
Screw XYN3+F6FXS
XXE4D5FXKS
Indicator Pulley VDP0511
XUC3FP
Indicator Belt VDV35
Screw XYN3+C6FXS
Motor Pulley VDP0306
(K) VDP0447 (M) VDP0449
Select one of these
Pulley Brim VDP0405
Set Screw XXE4D5FXKS
Connector Angle VMA1201
Set Screw XXE4D5FXKS
Counter Belt VDV0069
Cylinder Belt VDV27
Intermediate Pulley Belt VDV0044
Screw XTN3+8BFXS
Rubber Spacer VMX0033
Transistor Socket VJS57
Screw XYN4+F8FXS
Screw XSS4+8FXS
XWG4D9FX
XWA4AFX
Transistor 2SC647-Q
XSN4+25FXS
XWG4D9FX
Belt Guide VMA2838
XWA4AFX
XSN4+25FXS
Power Transformer ETP85Q1E
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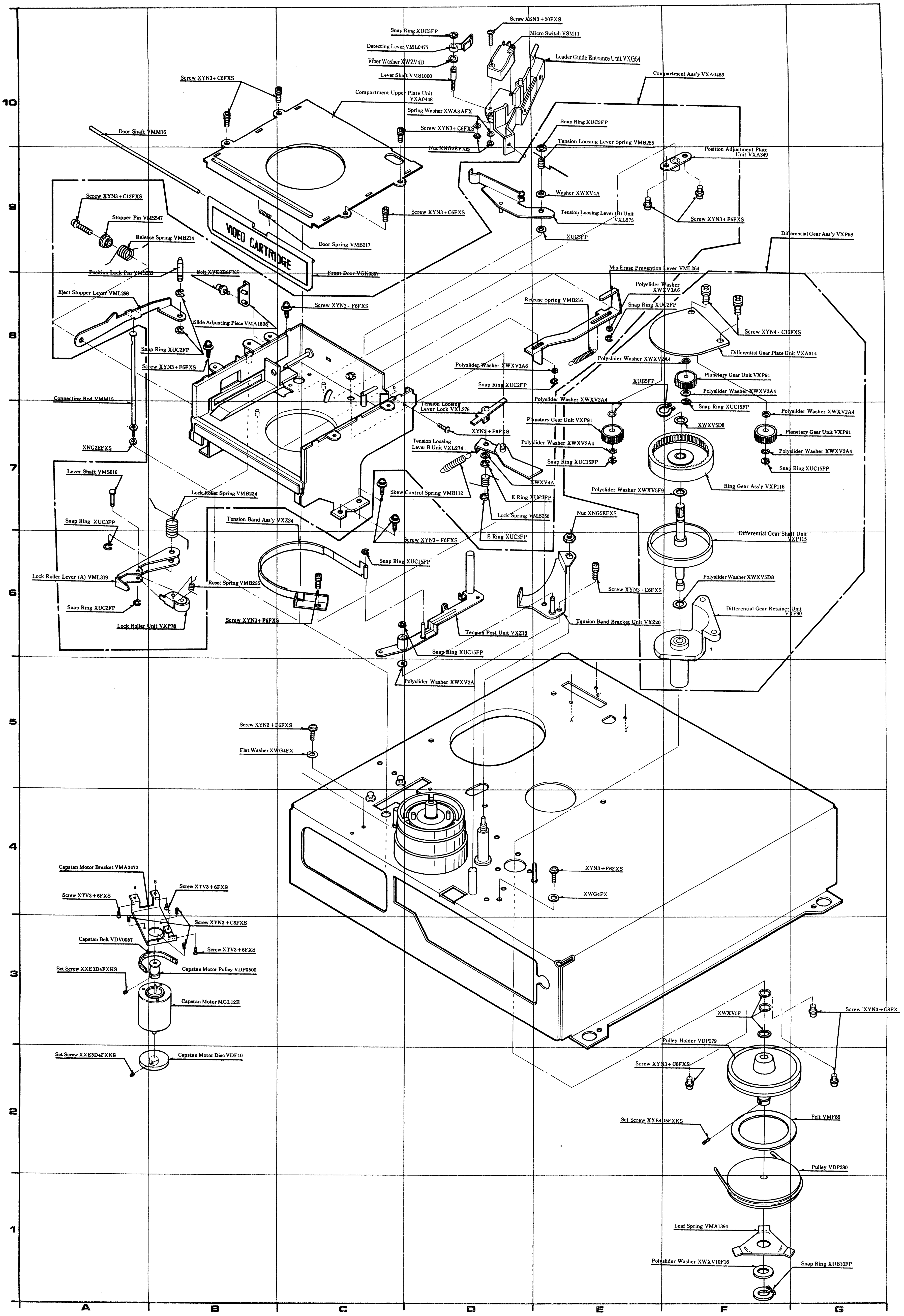
Snap Ring XUC3FP
Detecting Lever VML0477
Fiber Washer XWZV4D
Lever Shaft VMS1000
Screw XSN3+20FXS
Micro Switch VSM11
Leader Guide Entrance Unit VXG54
Compartment Ass'y VXA0463
Screw XYN3+C6FXS
Compartment Upper Plate Unit VXA0448
Spring Washer XWA3AFX
Screw XYN3+C6FXS
Nut XNG3EFXS
Door Shaft VMM16
Snap Ring XUC3FP
Tension Loosing Lever Spring VMB255
Position Adjustment Plate Unit VXA349
Washer XWXV4A
Tension Loosing Lever (B) Unit VXL275
Screw XYN3+F6FXS
XUC3FP
Screw XYN3+C12FXS
Stopper Pin VMS547
Release Spring VMB214
Screw XYN3+C6FXS
Door Spring VMB217
VIDEO CARTRIDGE
Position Lock Pin VMS553
Bolt XVE3B6FXS
Front Door VGK0307
Differential Gear Ass'y VXP98
Mis-Erase Prevention Lever VML264
Polyslider Washer XWXV3A6
Eject Stopper Lever VML298
Screw XYN3+F6FXS
Release Spring VMB216
Snap Ring XUC2FP
Slide Adjusting Piece VMA1538
Screw XYN4+C10FXS
Differential Gear Plate Unit VXA314
Snap Ring XUC2FP
Screw XYN3+F6FXS
Polyslider Washer XWXV3A6
Polyslider Washer XWXV2A4
Snap Ring XUC2FP
Planetary Gear Unit VXP91
Polyslider Washer XWXV2A4
XUB5FP
Snap Ring XUC15FP
Connecting Rod VMM15
Tension Loosing Lever Lock VXL276
Polyslider Washer XWXV2A4
Polyslider Washer XWXV2A4
XYN3+F6FXS
Planetary Gear Unit VXP91
XWXV5D8
Planetary Gear Unit VXP91
XNG2EFXS
Tension Loosing Lever B Unit VXL274
Polyslider Washer XWXV2A4
Polyslider Washer XWXV2A4
Snap Ring XUC15FP
Snap Ring XUC15FP
Lever Shaft VMS616
Lock Roller Spring VMB234
Skew Control Spring VMB112
XWXV4A
E Ring XUC3FP
Polyslider Washer XWXV5F9
Ring Gear Ass'y VXP116
Lock Spring VMB256
Snap Ring XUC3FP
Tension Band Ass'y VXZ24
Nut XNG5EFXS
Screw XYN3+F6FXS
E Ring XUC3FP
Differential Gear Shaft Unit VXP115
Snap Ring XUC15FP
Lock Roller Lever (A) VML319
Reset Spring VMB235
Screw XYN3+C6FXS
Polyslider Washer XWXV5D8
Snap Ring XUC2FP
Differential Gear Retainer Unit VXP90
Tension Band Bracket Unit VXZ20
Lock Roller Unit VXP78
Screw XYN3+F6FXS
Tension Post Unit VXZ18
Snap Ring XUC15FP
Polyslider Washer XWXV2A
A'
B'
C'
Screw XYN3+F6FXS
Flat Washer XWG4FX
XYN3+F8FXS
XWG4FX
Capstan Motor Bracket VMA2472
A
B
C
Screw XTV3+6FXS
Screw XTV3+6FXS
Screw XYN3+C6FXS
Capstan Belt VDV0057
Screw XTV3+6FXS
Set Screw XXE3D4FXKS
Capstan Motor Pulley VDP0500
Capstan Motor MGL12E
Set Screw XXE3D4FXKS
Capstan Motor Disc VDF10
XWXV5F
Screw XYN3+C8FX
Pulley Holder VDP279
Screw XYN3+C8FXS
Set Screw XXE4D5FXKS
Felt VMF86
Pulley VDP280
Leaf Spring VMA1394
Polyslider Washer XWXV10F16
Snap Ring XUB10FP
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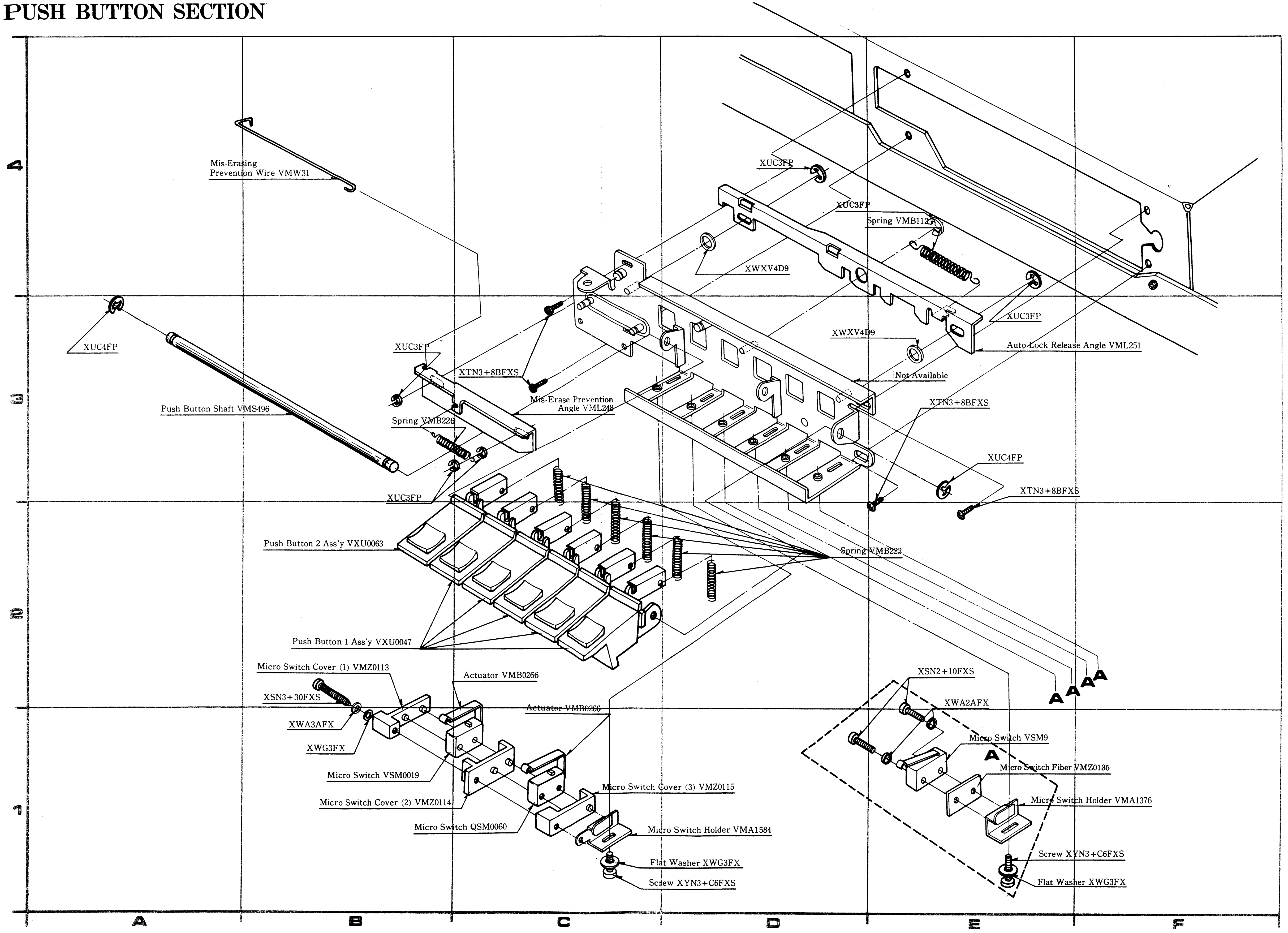
PUSH BUTTON SECTION


4
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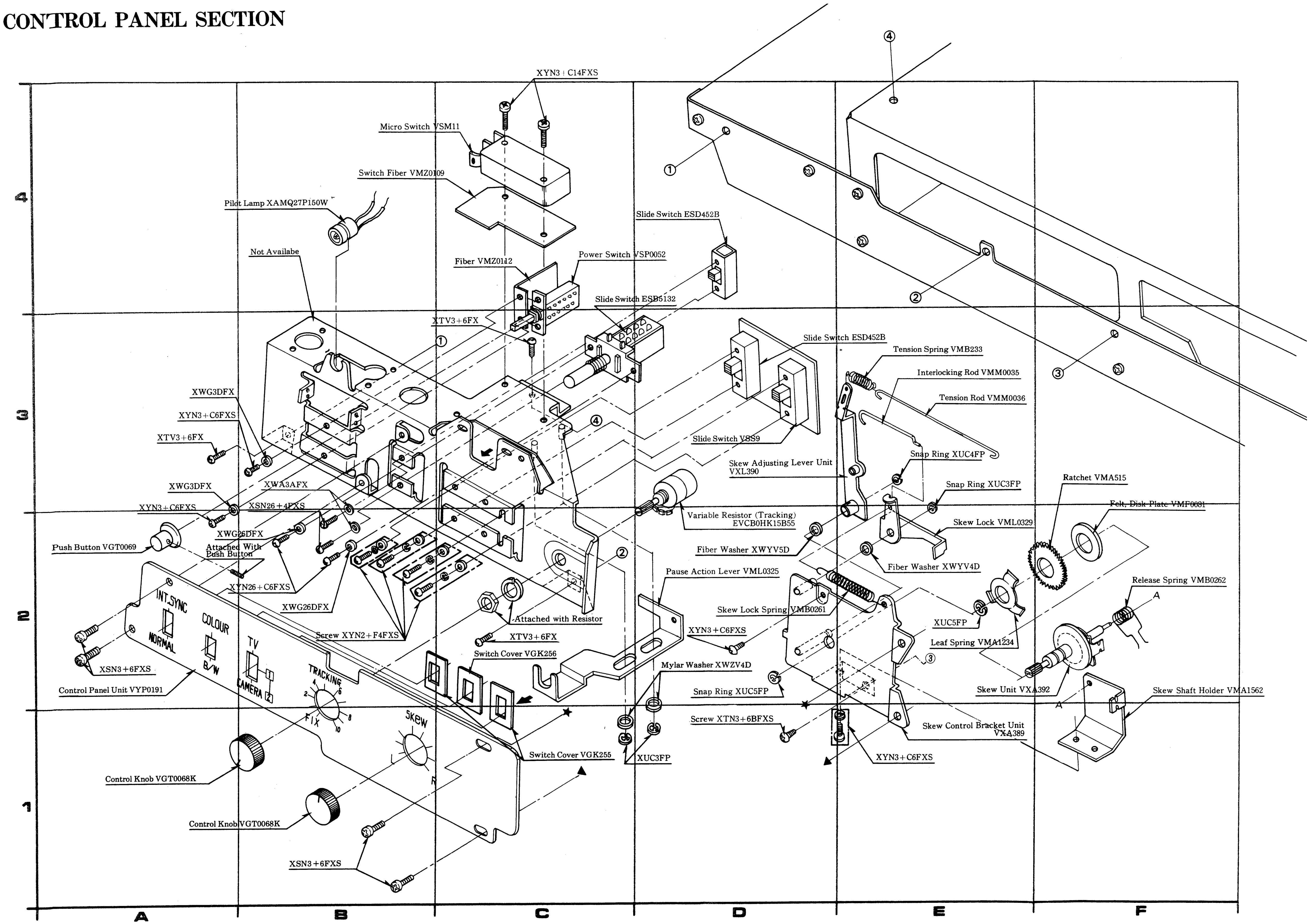
Mis-Erasing Prevention Wire VMW31
XUC4FP
Push Button Shaft VMS496
XUC3FP
XTN3+8BFXS
Mis-Erase Prevention Angle VML248
Spring VMB226
XUC3FP
XUC3FP
XUC3FP
Spring VMB112
XWXV4D9
XUC3FP
XWXV4D9
Auto-Lock Release Angle VML251
Not Available
XTN3+8BFXS
XUC4FP
XTN3+8BFXS
Push Button 2 Ass'y VXU0063
Spring VMB223
Push Button 1 Ass'y VXU0047
Micro Switch Cover (1) VMZ0113
XSN3+30FXS
XWA3AFX
XWG3FX
Actuator VMB0266
Actuator VMB0266
Micro Switch VSM0019
Micro Switch Cover (2) VMZ0114
Micro Switch Cover (3) VMZ0115
Micro Switch QSM0060
Micro Switch Holder VMA1584
Flat Washer XWG3FX
Screw XYN3+C6FXS
A
A
A
A
XSN2+10FXS
XWA2AFX
Micro Switch VSM9
A
Micro Switch Fiber VMZ0135
Micro Switch Holder VMA1376
Screw XYN3+C6FXS
Flat Washer XWG3FX

CONTROL PANEL SECTION


XYN3+C14FXS
Micro Switch VSM11
Switch Fiber VMZ0109
Pilot Lamp XAMQ27P150W
Not Availabe
Slide Switch ESD452B
Fiber VMZ0112
Power Switch VSP0052
Slide Switch ESB5132
XTV3+6FX
①
②
③
④
Slide Switch ESD452B
Tension Spring VMB233
Interlocking Rod VMM0035
Tension Rod VMM0036
XWG3DFX
XYN3+C6FXS
XTV3+6FX
Slide Switch VSS9
Skew Adjusting Lever Unit VXL390
Snap Ring XUC4FP
Snap Ring XUC3FP
Ratchet VMA515
Felt, Disk Plate VMF0081
XWG3DFX
XWA3AFX
XYN3+C6FXS
XSN26+4FXS
Variable Resistor (Tracking) EVCB0HK15B55
Skew Lock VML0329
Push Button VGT0069
XWG26DFX
Attached With Push Button
Fiber Washer XWYV5D
Fiber Washer XWYV4D
XYN26+C6FXS
Pause Action Lever VML0325
Release Spring VMB0262
A
XWG26DFX
Skew Lock Spring VMB0261
XUC5FP
Attached with Resistor
XYN3+C6FXS
Screw XYN2+F4FXS
XTV3+6FX
Leaf Spring VMA1234
XSN3+6FXS
Switch Cover VGK256
Mylar Washer XWZV4D
Control Panel Unit VYP0191
Snap Ring XUC5FP
Skew Unit VXA392
Skew Shaft Holder VMA1562
A
INT.SYNC
NORMAL
COLOUR
B/W
TV
CAMERA
TRACKING
2 4 6 8 10
FIX
SKEW
L
R
Screw XTN3+6BFXS
Skew Control Bracket Unit VXA389
Switch Cover VGK255
XUC3FP
XYN3+C6FXS
Control Knob VGT0068K
Control Knob VGT0068K
XSN3+6FXS
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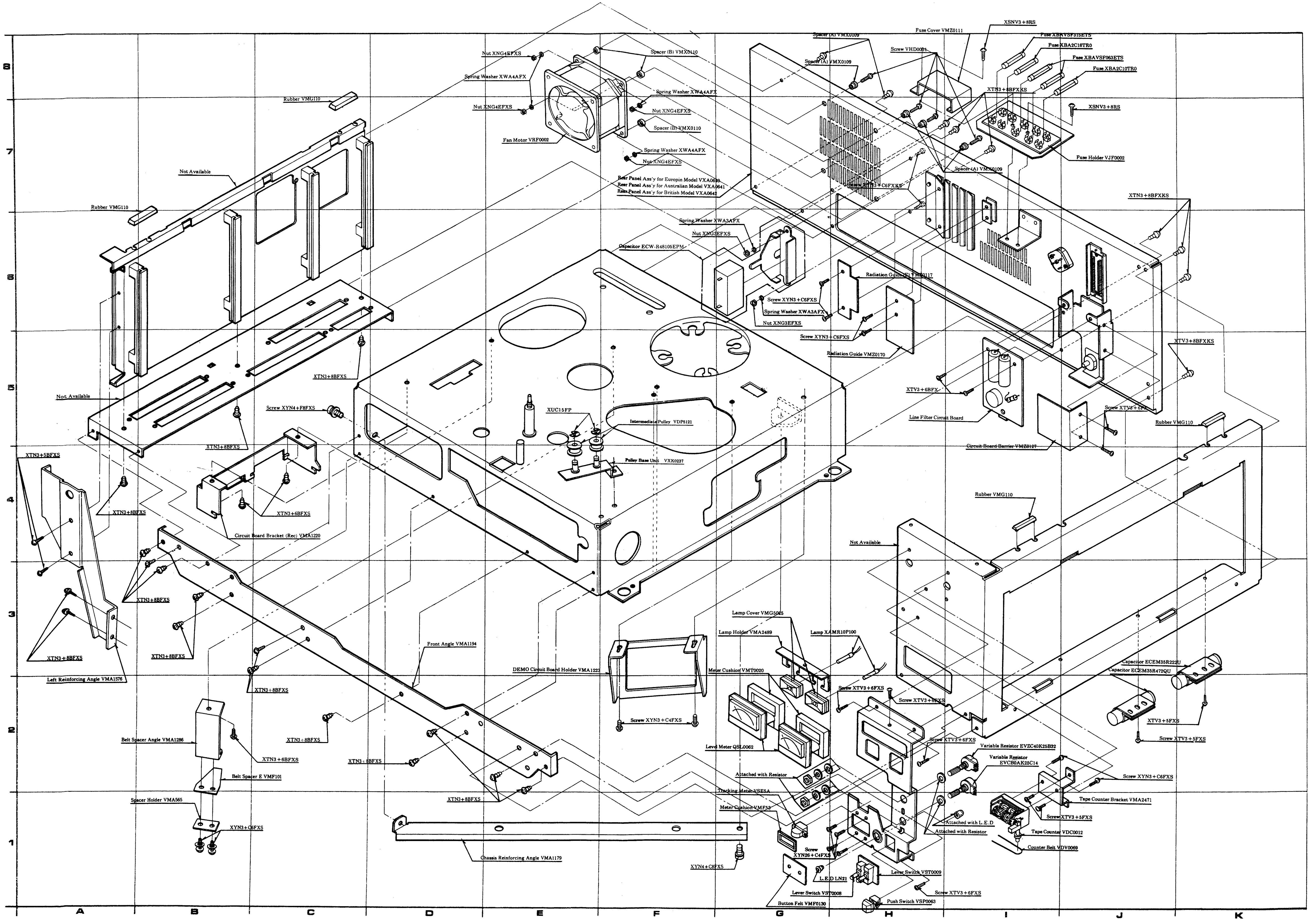
8
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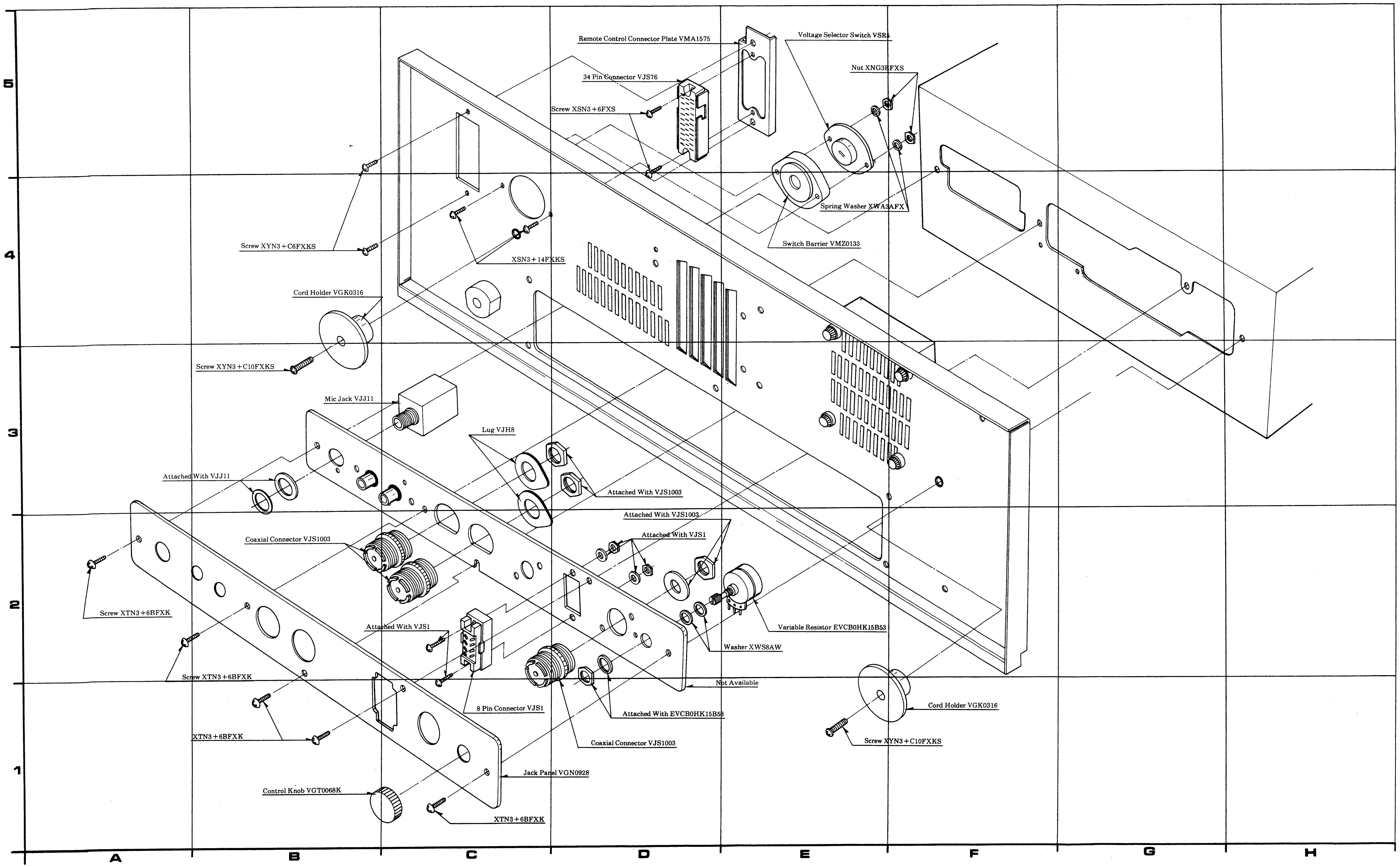
Nut XNG4EFXS
Spring Washer XWA4AFX
Nut XNG4EFXS
Fan Motor VRF0002
Spacer (B) VMX0110
Spring Washer XWA4AFX
Nut XNG4EFXS
Spacer (B) VMX0110
Spring Washer XWA4AFX
Nut XNG4EFXS
Rear Panel Ass'y for Europin Model VXA0640
Rear Panel Ass'y for Australian Model VXA0641
Rear Panel Ass'y for British Model VXA0642
Spacer (A) VMX0109
Spacer (A) VMX0109
Fuse Cover VMZ0111
Screw VHD0081
XSNV3+8RS
Fuse XBAVSF315ETS
Fuse XBA2C16TR0
Fuse XBAVSF063ETS
Fuse XBA2C10TR0
XTN3+8BFXKS
XSNV3+8RS
Fuse Holder VJF0002
Spacer (A) VMX0109
Screw XTN3+C6FXKS
XTN3+8BFXKS
Rubber VMG110
Not Available
Rubber VMG110
Not Available
XTN3+8BFXS
Screw XYN4+F8FXS
XTN3+8BFXS
Spring Washer XWA3AFX
Nut XNG3EFXS
Capacitor ECW-R48105EPM
Radiation Guide (E) VMZ0117
Screw XYN3+C6FXS
Spring Washer XWA3AFX
Nut XNG3EFXS
Screw XYN3+C6FXS
Radiation Guide VMZ0170
XTV3+8BFXKS
XTV3+6BFX
Line Filter Circuit Board
Screw XTV3+6FX
Rubber VMG110
Circuit Board Barrier VMZ0127
XUC15FP
Intermediate Pulley VDP5121
Pulley Base Unit VXK0237
XTN3+5BFXS
XTN3+8BFXS
XTN3+6BFXS
Circuit Board Bracket (Rec) VMA1220
XTN3+8BFXS
XTN3+8BFXS
XTN3+8BFXS
Left Reinforcing Angle VMA1576
Front Angle VMA1194
XTN3+8BFXS
XTN3+8BFXS
Belt Spacer Angle VMA1286
XTN3+6BFXS
Belt Spacer E VMF101
XTN3+8BFXS
XTN3+8BFXS
Spacer Holder VMA565
XYN3+C6FXS
Chassis Reinforcing Angle VMA1179
XYN4+C8FXS
DEMO Circuit Board Holder VMA1223
Screw XYN3+C4FXS
Rubber VMG110
Not Available
Lamp Cover VMG5025
Lamp Holder VMA2489
Lamp XAMR10P100
Meter Cushion VMT0020
Screw XTV3+6FXS
Screw XTV3+6FXS
Level Meter QSL0062
Attached with Resistor
Tracking Meter VSE5A
Meter Cushion VMF53
Screw
XYN26+C4FXS
L.E.D LN21
Lever Switch VST0008
Button Felt VMF0130
Lever Switch VST0009
Push Switch VSP0063
Screw XTV3+6FXS
Screw XTV3+6FXS
Variable Resistor EVZC40K25B32
Variable Resistor
EVCB0AK25C14
Attached with L.E.D
Attached with Resistor
Tape Counter VDC0012
Counter Belt VDV0069
Screw XTV3+5FXS
Tape Counter Bracket VMA2471
Screw XYN3+C6FXS
Capacitor ECEM35R222U
Capacitor ECEM35R472QU
XTV3+5FXS
Screw XTV3+5FXS

REAR PANEL SECTION


Remote Control Connector Plate VMA1575
Voltage Selector Switch VSR5
Nut XNG3EFXS
34 Pin Connector VJS76
Screw XSN3+6FXS
Spring Washer XWA3AFX
Switch Barrier VMZ0133
Screw XYN3+C6FXKS
XSN3+14FXKS
Cord Holder VGK0316
Screw XYN3+C10FXKS
Mic Jack VJJ11
Lug VJH8
Attached With VJJ11
Attached With VJS1003
Attached With VJS1003
Attached With VJS1
Coaxial Connector VJS1003
Variable Resistor EVCB0HK15B53
Washer XWS8AW
Screw XTN3+6BFXK
Attached With VJS1
Screw XTN3+6BFXK
Not Available
8 Pin Connector VJS1
Attached With EVCB0HK15B53
Cord Holder VGK0316
XTN3+6BFXK
Coaxial Connector VJS1003
Screw XYN3+C10FXKS
Jack Panel VGN0928
Control Knob VGT0068K
XTN3+6BFXK
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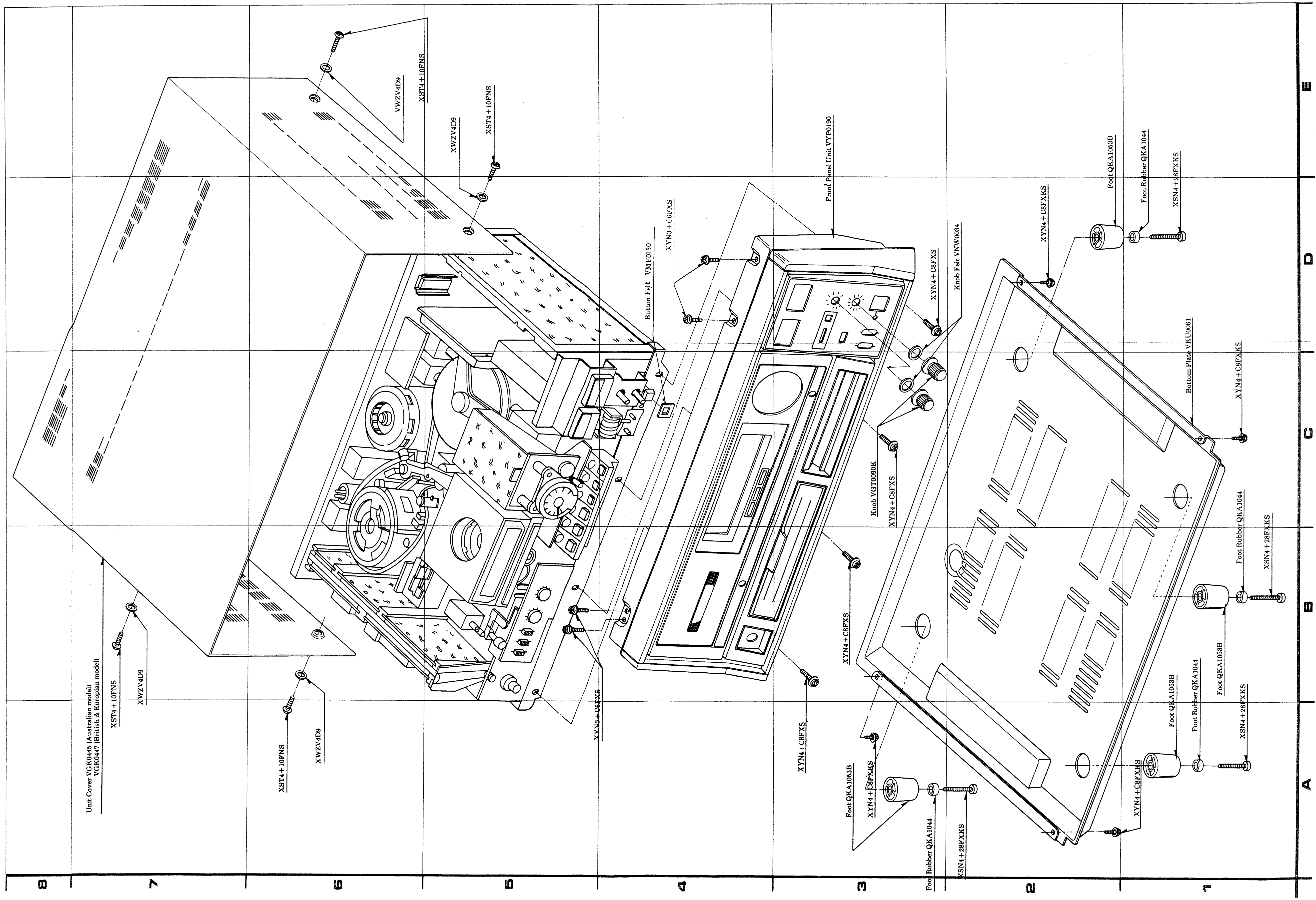
Unit Cover VGK0445 (Australian model)
VGK0447 (British & European model)
XST4+10FNS
XWZV4D9
XST4+10FNS
XWZV4D9
VWZV4D9
XST4+10FNS
XWZV4D9
XST4+10FNS
Button Felt VMF0130
XYN3+C6FXS
XYN3+C6FXS
Front Panel Unit VYP0190
XYN4+C8FXS
Knob Felt VNW0034
Knob VGT0090K
XYN4+C8FXS
XYN4+C8FXS
XYN4+C8FXS
Foot QKA1053B
Foot Rubber QKA1044
XSN4+28FXKS
XYN4+C8FXKS
Bottom Plate VKU0061
XYN4+C8FXKS
Foot Rubber QKA1044
XSN4+28FXKS
Foot QKA1053B
Foot QKA1053B
Foot Rubber QKA1044
XSN4+28FXKS
Foot QKA1053B
Foot Rubber QKA1044
XSN4+28FXKS
XYN4+C8FXKS
Foot QKA1053B
XYN4+C8FXKS
Foot Rubber QKA1044
XSN4+28FXKS
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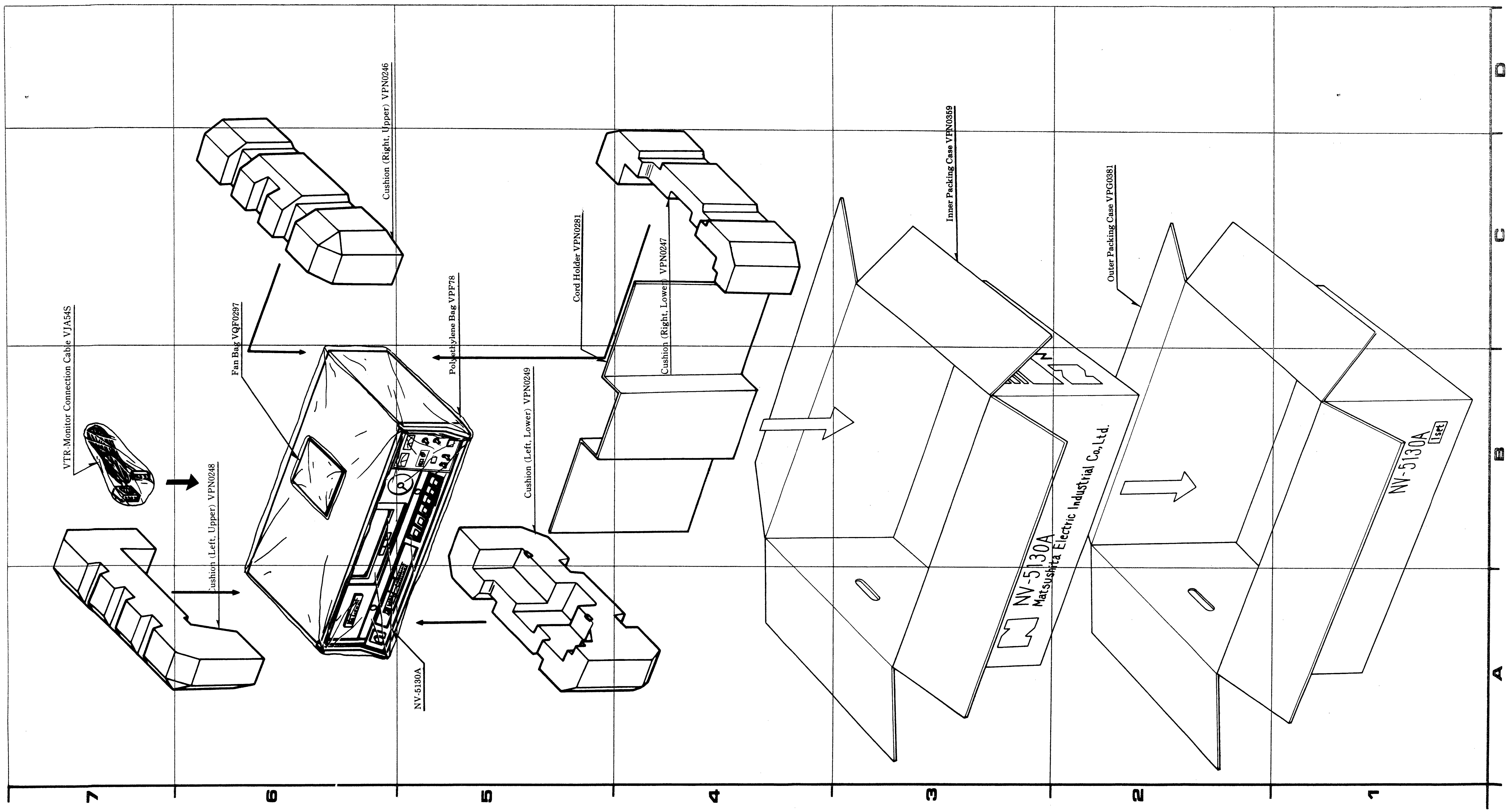
PACKAGING


VTR-Monitor Connection Cable VJA54S
Cushion (Left, Upper) VPN0248
Fan Bag VQF0297
Cushion (Right, Upper) VPN0246
Polyethylene Bag VPF78
NV-5130A
Cushion (Left, Lower) VPN0249
Cord Holder VPN0281
Cushion (Right, Lower) VPN0247
Inner Packing Case VPN0359
Outer Packing Case VPG0381
NV-5130A
Matsushita Electric Industrial Co., Ltd.
NV-5130A
1set
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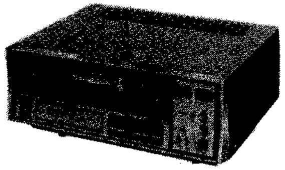
MECHANICAL PARTS LIST

Model No. NV-5130A-E/-A/-B/-EF

Notes:

1. Be sure to make your orders of replacement parts according to this list.
2. IMPORTANT SAFETY NOTICE
   Components identified by shade have special characteristics important for safety.
   When replacing any of these components, use only the original ones.



Ref. No.		Part No.	Part Name & Description	Pcs / Set	Remarks
5(3-B)		2H10AS	Brake Stator	1	
5(2-B)		2H10CR	Brake Rotor	1	
8(3-F)		2SC647-Q	Transistor	1	
8(6-F)		4FSC30EYL	Motor	1	
8(2-E)		ECEM35R222U	Capacitor	1	
8(2-E)		ECEM35R472QU	Capacitor	1	
12(6-G)		ECW-R48105EPM	Capacitor	1	
8(7-C)		EME134	Indicator Unit	1	
11(3-C)		ESB5132	Slide Switch	1	
11(3-D)		ESD452B	Slide Switch	2	
8(1-D)		ETP85Q6E	Power Transformer	1	
12(1-I)		EVCB0AK25C14	Variable Resistor	1	
13(2-E)		EVCB0HK15B53	Variable Resistor	1	
11(3-D)		EVCB0HK15B55	Variable Resistor	1	
12(1-I)		EVZC40K25B32	Variable Resistor	1	
12(1-G)		LN21	L.E.D.	1	
9(3-B)		MGL12E	Capstan Motor	1	
14(1-A,1-B, 1-D,3-A)		QKA1044	Foot Rubber	4	
14(1-A,1-B, 2-D,3-A)		QKA1053B	Foot	4	
12(2-G)		QSL0062	Level Meter	2	
6(2-C),7(9-F), 8(2-A),8(2-B)		QSM0043	Micro Switch	4	
8(6-G)		VDB0405	Pulley Brim	1	
10(1-C)		QSM0060	Micro Switch	1	
5(8-B)		VBK3	PG Coil	2	
5(7-G)		VCD1M	Cds	1	
5(6-D)		VDB171	A Post Collar	1	
5(6-D)		VDB172	A Post Washer	1	
5(8-F)		VDB178	C Post Washer	1	
5(8-F)		VDB179	C Post Collar	1	
12(1-I)		VDC0012	Tape Counter	1	

Ref. No.		Part No.	Part Name & Description	Pcs / Set	Remarks
9(2-B)		VDF10	Capstan Motor Disc	1	
5(1-C)		VDF15	Flywheel	1	
		VDP0306	Motor Pulley (5)	1	
8(5-F)		VDP0447	Motor Pulley (K) } Select one of these	(1)	
8(5-F)		VDP0449	Motor Pulley (M)	(1)	
9(3-B)		VDP0500	Capstan Motor Pulley	1	
8(6-C)		VDP0511	Indicator Pulley	1	
5(3-B)		VDP248	Unit Pulley (D)	1	
5(3-B)		VDP0348	Unit Pulley (E) } Select one of these	(1)	
5(3-B)		VDP0347	Unit Pulley (F)	(1)	
6(1-E)		VDP259	Roller	1	
6(3-C,D)		VDP260	Roller	2	
7(5-C)		VDP263	Intermediate Pulley	1	
5(8-G)		VDP277	Limiter Roller	1	
9(2-F)		VDP279	Pulley Holder	1	
9(1-F)		VDP280	Pulley	1	
12(4-F)		VDP5121	Intermediate Pulley	2	
7(5-B),8(5-F)		VDV0044	Intermediate Belt	1	
9(3-B)		VDV0057	Capstan Belt	1	
8(5-C),12(1-I)		VDV0069	Counter Belt	1	
8(5-E)		VDV27	Cylinder Belt	1	
8(6-C)		VDV35	Indicator Belt	1	
7(5-C)		VDV36	Planetary Gear Belt	1	
5(6-B)		VEG0087	Upper Cylinder Unit	1	
5		VEG0089	Cylinder Unit Ass'y	1	
5(4-B,5-B)		VEH0050	Video Head Disk Unit	1	
7(5-G)		VEP0025A	Solenoid Terminal Board Ass'y	1	
9(9-B)		VGK0307	Front Door	1	
13(1-F,4-B)		VGK0316	Cord Holder	2	

Ref. No.		Part No.	Part Name & Description	Pcs / Set	Remarks
14		VGK0445	Unit Cover for Australian Model	1	
14		VGK0447	Unit Cover for British & Europian Models	1	
11(2-C)		VGK255	Slide Switch Cover	2	
11(2-C)		VGK256	Slide Switch Cover (B)	1	
13(2-B)		VGN0928	Jack Panel	1	
11(1-B),13(1-C)		VGT0068K	Control Knob (Skew, Tracking, Colour Lock)	3	
11(2-A)		VGT0069	Push Button	1	
14(3-C)		VGT0090K	Knob	2	
12(7-I)		VHD0031	Screw	4	
		VJA0074	Power Cord (British Model)	1	
		VJA0087	Power Cord (Australian Model)	1	
		VJA45	Power Cord (Europian Model)	1	
15(7-B)		VJA54S	VTR-Monitor Connection Cable	1	
8(7-B)		VJB0022	Lamp Circuit Board	1	
12(7-I)		VJF0002	Fuse Holder	1	
13(3-C)		VJH8	Coaxial Lug	2	
13(3-C)		VJJ11	Mic Jack	1	
8(6-B)		VJR1L4PSUB	Lug Terminal	1	
13(2-C)		VJS1	TV-Monitor Socket (EIAJ)	1	
13(2-C,2-D)		VJS1003	Coaxial Socket	3	
8(5-F)		VJS57	Transistor Socket	1	
13(5-D)		VJS76	34 Pin Remote Control Connector	1	
14		VKU0061	Bottom Plate	1	
7(7-F)		VMA1176	Pressure Adjusting Piece	1	
7(6-E)		VMA1178	Solenoid Mounting Bracket	1	
12(1-D)		VMA1179	Chassis Reinforcing Angle	1	
12(2-D)		VMA1194	Front Angle	1	
8(5-D)		VMA1201	Connector Angle	1	
12(4-B)		VMA1220	Circuit Board Bracket (REC)	1	
12(6-D)		VMA1223	Demodulator Circuit Board Holder	1	
8(7-B)		VMA1228	Push Button Lamp Holder	1	
11(2-E)		VMA1234	Leaf Spring	1	
7(8-F)		VMA1262	F.F Solenoid Mounting Bracket	1	
7(9-F)		VMF1263	Switch Bracket	1	

Ref. No.		Part No.	Part Name & Description	Pcs / Set	Remarks
6(4-F),8(6-D)		VMA1276	Level Guide	1	
12(2-B)		VMA1286	Belt Spacer Angle	1	
7(9-C)		VMA1289	Takeup Reel Spring	1	
5(6-G)		VMA1290	Transport Regulating Angle	1	
5(6-F)		VMA1302	Erase Head Bracket	1	
5(7-G)		VMA1303	Cds Angle	1	
7(6-A)		VMA1311	Flat Spring	1	
6(3-C)		VMA1333	Arm Holding Bracket	1	
10(2-E)		VMA1376	Micro Switch Holder	2	
6(3-A)		VMA1391	Solenoid Bracket	1	
9(1-F)		VMA1394	Leaf Spring	1	
7(1-B)		VMA1395	Solenoid Mounting Angle	1	
7(5-A)		VMA1456	Brake Slip Plate	1	
6(2-F)		VMA1530	Spring Hook	1	
7(8-A)		VMA1534	Tape Threading Guide Lever	1	
9(8-B)		VMA1538	Slide Adjusting Piece	1	
6(9-D)		VMA1539	Release Angle	1	
11(1-F)		VMA1562	Skew Shaft Holder	1	
6(9-B)		VMA1567	Solenoid Mounting Bracket	1	
8(5-B)		VMA1570	Skew Solenoid Bracket	1	
8(5-A)		VMA1571	Solenoid Stopper	1	
13(5-C)		VMA1575	Remote Control Terminal Plate	1	
12(3-A)		VMA1576	Left Reinforcing Angle	1	
10(1-C)		VMA1584	Micro Switch Holder	1	
7(5-F)		VMA1585	Switch Angle	1	
7(1-E)		VMA1608	Belt Spacer Angle	1	
7(5-A)		VMA1651	Brake Shoe Angle	1	
5(8-B)		VMA1652	PG Coil Angle	1	
5(8-B)		VMA1819	Brush Plate	1	
5(8-A)		VMA1820	Brush Angle	1	
5(8-B)		VMA1821	Spring Guide	1	
5(5-B)		VMA1822	Detecting Angle (1)	1	
5(5-B)		VMA1823	Detecting Angle (2)	1	

Ref. No.		Part No.	Part Name & Description	Pcs / Set	Remarks
5(5-B)		VMA1824	Detecting Angle (3)	1	
5(5-B)		VMA1825	Detecting Angle (4)	1	
12(1-I)		VMA2471	Tape Counter Bracket	1	
9(3-B)		VMA2472	Capstan Motor Bracket	1	
5(5-D)		VMA2473	A/C Head Angle	1	
5(4-D)		VMA2474	A/C Head Plate	1	
5(7-B)		VMA2483	PG Coil Angle (C)	1	
12(2-G)		VMA2489	Lamp Holder	1	
8(2-E)		VMA2838	Belt Guide	1	
11(2-F)		VMA515	Ratchet	1	
6(2-C,11-A,10-A) 7(9-F),8(2-A,2-B)		VMA5377	Micro Switch Fiber	6	
7(1-E),12(1-B)		VMA565	Spacer Holder	2	
5(4-C)		VMA987	Tape Loosing	1	
6(9-B)		VMB0260	Spring	1	
11(2-E)		VMB0261	Skew Lock Spring	1	
11(2-F)		VMB0262	Release Spring	1	
7(5-G),10(1-C)		VMB0266	Actuator	3	
7(5-A)		VMB0270	Spring	1	
6(8-F)		VMB11	Release Spring	1	
9(7-D),10(4-E)		VMB112	Skew Control Spring	2	
7(6-E)		VMB196	Release Spring	1	
7(5-E)		VMB197	Spring	1	
7(9-F)		VMB198	F.F Arm Release Spring	1	
7(6-D)		VMB199	Resease Spring	1	
5(4-D)		VMB2	Spring	3	
6(9-E)		VMB201	Pressure Roller Spring	1	
6(1-E)		VMB204	Arm Release Spring	1	
6(2-D)		VMB206	Lever Release Spring	1	
6(2-B)		VMB207	Solenoid Release Spring	1	
6(7-D)		VMB209	Spring	1	
6(8-F)		VMB211	Action Arm Spring	1	
6(8-D)		VMB212	Release Spring	1	
7(2-A)		VMB213	Spring	1	
9(9-A)		VMB214	Release Spring	1	

Ref. No.		Part No.	Part Name & Description	Pcs / Set	Remarks
9(8-E)		VMB216	Release Spring	1	
9(9-B)		VMB217	Door Spring	1	
10(2-C,2-D,3-C)		VMB223	Spring	6	
10(3-B)		VMB226	Spring	1	
5(6-D,8-F)		VMB227	Spring	2	
5(4-G)		VMB229	Spring	1	
7(1-E)		VMB231	Spring	1	
7(2-G)		VMB232	Spring	1	
7(1-E),6(10-C)		VMB233	Tension Spring	1	
9(7-B)		VMB234	Lock Roller Spring	1	
9(6-B)		VMB235	Reset Spring	1	
9(9-E)		VMB255	Tension Loosing Lever Spring	1	
9(7-D)		VMB256	Lock Spring	1	
6(2-F)		VMB257	Reel Up-down Spring	1	
7(7-A)		VMB258	Spring	1	
7(7-D)		VMB46	Rewind Spring	1	
6(10-C)		VMB94	Reset Lever Spring	1	
11(2-F)		VMF0081	Felt, Disk Plate	1	
7(5-A)		VMF0102	Shoe Felt	1	
14(4-C)		VMF0130	Button Felt	1	
7(1-E),12(1-B)		VMF101	Belt Spacer E	2	
12(2-G)		VMF53	Meter Cushion	1	
9(2-E)		VMF86	Felt	1	
12(6-B,7-C)		VMG110	Rubber	4	
5(6-E)		VMG111	Rubber Spacer	3	
5(5-G)		VMG35	Capstan Cap	1	
12(2-G)		VMG5025	Lamp Cover	2	
7(6-C)		VMK93	Takeup Reel Bracket	1	
11(2-C)		VML0325	Pause Action Lever	1	
6(9-D)		VML0326	Interconnecting Lever	1	
6(9-C)		VML0327	Ratchet Action Lever	1	
11(2-E)		VML0329	Skew Lock	1	
8(4-B)		VML0331	Skew Release Plate	1	
7(2-F)		VML0342	Takeup Reel Brake Lever	1	

Ref. No.		Part No.	Part Name & Description	Pcs / Set	Remarks
9(10-D)		VML0477	Detecting Lever	1	
7(6-F)		VML233	Rewind Interlocking Lever	1	
6(7-E)		VML239	Interlocking Lever	1	
10(3-C)		VML248	Mis-erase Prevention Angle	1	
10(3-E)		VML251	Auto Recording Lockout Plate	1	
6(7-B)		VML254	Mis-erase Prevention Lever	1	
6(8-D)		VML262	Ratchet	1	
9(8-E)		VML264	Mis-erase Prevention Lever	1	
7(8-E)		VML267	F.F Roller Up-down Arm	1	
6(9-E)		VML273	Tension Lever Adjusting Lever	1	
9(8-A)		VML298	Eject Stopper Lever	1	
6(3-B)		VML304	Reset Lever	1	
9(6-A)		VML319	Lock Roller Lever (A)	1	
8(4-B),11(3-E)		VMM0035	Interlocking Rod	1	
6(10-C),11(3-E)		VMM0036	Tension Rod	1	
5(8-B)		VMM0040	Rod Spring	1	
9(8-A)		VMM15	Connecting Rod	1	
9(10-A)		VMM16	Door Shaft	1	
9(10-D)		VMS1000	Lever Shaft	1	
5(4-G)		VMS446	Capstan Shaft	1	
10(3-B)		VMS496	Push Button Shaft	1	
6(1-E)		VMS508	Pin	1	
6(3-E)		VMS509	Up-down Arm Pin	1	
6(2-D)		VMS514	Collar	1	
6(3-B)		VMS516	Solenoid Pin	1	
7(6-A)		VMS545	Spacer	1	
9(9-A)		VMS547	Stopper Pin	1	
9(9-B)		VMS553	Position Lock Pin	1	
7(6-D)		VMS562	F.F Roller Shaft	1	
7(9-C)		VMS573	Reel Collar	1	
7(6-C)		VMS574	Takeup Reel Shaft	1	
7(8-G)		VMS583	F.F Roller Up-down Arm Shaft	1	
5(7-E)		VMS587	Guide Height Adjusting Shaft	1	

Ref. No.		Part No.	Part Name & Description	Pcs / Set	Remarks
6(1-D)		VMS591	Height Adjusting Screw	1	
9(7-A)		VMS616	Lever Shaft	1	
6(1-D)		VMS617	Reel Shaft Stop Ring	1	
7(7-D)		VMS680	F.F Arm Shaft	1	
6(1-C)		VMS693	Cam Shaft	1	
12(2-G)		VMT0020	Meter Cushion	2	
6(8-D)		VMW27	Washer	1	
6(5-A),10(4-B)		VMW31	Mis-erase Prevention Wire	1	
8(4-D,4-E)		VMX0033	Rubber Spacer	4	
12(7-H)		VMX0109	Spacer (A)	4	
12(7-F)		VMX0110	Spacer (B)	4	
11(4-C)		VMZ0109	Switch Fiber	1	
12(7-H)		VMZ0111	Fuse Cover	1	
11(4-C)		VMZ0112	Fiber	1	
10(1-B)		VMZ0113	Micro Switch Cover (1)	1	
10(1-C)		VMZ0114	Micro Switch Cover (2)	1	
10(1-C)		VMZ0115	Micro Switch Cover (3)	1	
12(6-H)		VMZ0117	Radiation Guide (E)	1	
13(2-G)		VMZ0118	Capacitor Cover	1	
7(5-G)		VMZ0124	Micro Switch Cover (4)	1	
7(4-G)		VMZ0125	Micro Switch Cover (5)	1	
12(4-J)		VMZ0127	Circuit Board Barrier	1	
13(4-G)		VMZ0133	Voltage Selector Barrier	1	
10(7-E)		VMZ0135	Micro Switch Fiber	4	
12(5-H)		VMZ0170	Radiation Guide	1	
5(8-B)		VMZ24	Fiber	1	
6(8-D)		VMW27	Washer	1	
7(10-C)		VNW13	Washer	1	
14(3-C)		VNW0034	Knob Felt	2	
15(5-B)		VPF78	Polyetylene Bag	1	
15(2-C)		VPG0381	Outer Packing Case	1	
15(6-C)		VPN0246	Cushion (Right, Upper)	1	
15(4-C)		VPN0247	Cushion (Right, Lower)	1	

Ref. No.		Part No.	Part Name & Description	Pcs / Set	Remarks
15(6-A)		VPN0248	Cushion (Left, Upper)	1	
15(5-A)		VPN0249	Cushion (Left, Lower)	1	
15(4-B)		VPN0281	Cord Holder	1	
15(3-B)		VPN0359	Inner Packing Case	1	
15(6-B)		VQF0297	Fan Bag	1	
12(7-E)		VRF0002	Fan Motor	1	
5(8-B)		VSA7	Slip Ring Brush	1	
12(1-G)		VSE5A	Tracking Meter	1	
6(10-B)		VSJ0024	Solenoid (Pressure Roller)	1	
8(5-B)		VSJ0025	Solenoid (Skew)	1	
6(2-B)		VSJ15	Solenoid (Eject)	1	
7(1-A,6-E,8-F)		VSJ17	Solenoid (F.F, REW, Supply Brake)	3	
7(4-G)		VSJ22	Solenoid (Takeup Brake)	1	
7(5-G),10(1-C)		VSM0019	Micro Switch	2	
11(4-C),6(10-D)		VSM11	Micro Switch	2	
6(11-A),10(1-E)		VSM9	Micro Switch	6	
11(4-C)		VSP0052	Power Switch	1	
12(1-H)		VSP0063	Push Switch	1	
13(5-E)		VSR5	Voltage Selector Switch	1	
11(3-D)		VSS9	Slide Switch	1	
12(1-H)		VST0008	Lever Switch	1	
12(1-H)		VST0009	Lever Switch	1	
8(7-D)		VXA0407	Indicator Mounting Ass'y	1	
6(6-A)		VXA0416	Skew Ass'y	1	
9		VXA0436	Compartment Ass'y	1	
9(9-C)		VXA0448	Compartment Upper Plate Unit	1	
12		VXA0640	Rear Panel Ass'y (Europian Model)	1	
12		VXA0641	Rear Panel Ass'y (Australian Model)	1	
12		VXA0642	Rear Panel Ass'y (British Model)	1	
7(7-C)		VXA0645	Fixed Tension Ass'y	1	
8(2-B)		VXA294	Micro Switch Bracket Unit	1	
5(6-E)		VXA299	Leader Guide Holder	1	
9(8-F)		VXA314	Differential Gear Plate Unit	1	

Ref. No.		Part No.	Part Name & Description	Pcs / Set	Remarks
9(9-F)		VXA349	Position Adjustment Plate Unit	1	
6(2-C)		VXA351	Up-down Switch Mounting Angle Unit	1	
6(11-B)		VXA387	Mis-erase Prevention Switch Bracket Unit	1	
6(10-C)		VXA388	Mis-erase Detection Lever Unit	1	
11(2-D)		VXA389	Skew Control Bracket Unit	1	
11(2-F)		VXA392	Skew Unit	1	
6(6-B)		VXA394	Mis-erase Prevention Angle Unit	1	
7(9-A)		VXD11	Intermediate Pulley Retainer Unit	1	
9(10-D)		VXG54	Leader Guide Entrance Unit	1	
5(5-B)		VXJ0009	Slip Ring Ass'y	1	
5(8-E)		VXK0233	Tape Leading Guide Unit	1	
12(4-F)		VXK0237	Pulley Base Unit	1	
6(3-E)		VXK141	Reel Up-down Chassis Unit	1	
7(7-A)		VXK155	Tape Threading Guide Bracket Unit	1	
6(7-C)		VXL220	Push Lever Unit	1	
6(7-F)		VXL222	Forward Action Lever Unit	1	
6(7-E)		VXL223	Forward Arm Unit	1	
6(8-G)		VXL225	Leading Arm Connection Lever Unit	1	
6(7-G)		VXL226	Leading Arm Mounting Angle Unit	1	
6(9-F)		VXL228	Tape Leading Arm Unit	1	
7(7-D)		VXL230	Fast Forward Roller Arm Unit	1	
7(5-E)		VXL232	Rewind Roller Arm Unit	1	
6(9-E)		VXL235	Pressure Plate Unit	1	
6(8-E)		VXL236	Action Lever Unit	1	
6(2-D)		VXL245	Action Arm Unit	1	
6(3-F)		VXL246	Reel Up-down Cam Unit	1	
9(7-D)		VXL274	Tension Loosing Lever A Unit	1	
9(9-D)		VXL275	Tension Loosing Lever B Unit	1	
9(7-D)		VXL276	Tension Loosing Lever Lock Unit	1	
6(1-E)		VXL278	Reel Up-down Arm Unit	1	
6(3-F)		VXL279	Spring Lever Unit	1	
8(4-B)		VXL283	Release Lever Unit	1	
11(3-E)		VXL390	Skew Adjusting Lever Unit	1	
9(6-F)		VXP115	Differential Gear Shaft Unit	1	

Ref. No.	Part No.	Part Name & Description	Pcs / Set	Remarks
9(7-F)	VXP116	Ring Gear Ass'y	1	
7(7-D)	VXP130	F.F Roller Unit	1	
9(6-B)	VXP78	Lock Roller Unit	1	
7(9-A)	VXP82	Intermediate Roller Unit	1	
7(5-D)	VXP86	Rewind Idler Unit	1	
9(6-F)	VXP90	Differential Gear Retainer Unit	1	
9(7-E,7-F,8-F)	VXP91	Planetary Gear Unit	3	
5(5-G)	VXP94	Pressure Roller Unit	1	
6(7-E),7(5-A)	VXP97	Roller Unit	2	
9	VXP98	Differential Gear Ass'y	1	
6(2-D)	VXR29	Reel Shaft Retainer Unit	1	
6(8-C)	VXR36	Supply Reel Table Unit	1	
6(7-D)	VXR37	Supply Reel Pulley Unit	1	
7(7-C)	VXR38	Takeup Reel Pulley Unit	1	
7(8-C)	VXR39	Takeup Reel Unit	1	
7(9-C)	VXR44	Takeup Reel Guide Unit	1	
10(2-C)	VXU0047	Push Button Unit	5	
10(2-B)	VXU0063	Push Button Unit	1	
10	VXU0080	Push Button Ass'y	1	
7(4-G)	VXZ14	Takeup Reel Brake Unit	1	
7(2-E)	VXZ15	Takeup Reel Brake Unit	1	
6(10-D),9(6-D)	VXZ18	Tension Post Unit	1	
6(8-D),9(6-E)	VXZ20	Tension Band Bracket Unit	1	
7(4-A)	VXZ22	Supply Reel Brake Arm Unit	1	
7(2-B)	VXZ23	Interlocking Lever Unit	1	
9(6-C)	VXZ24	Tension Band Ass'y	1	
14	VYP0190	Front Panel Unit	1	
11(2-A)	VYP0191	Control Panel Unit	1	
5(5-D)	WY668LY	Audio/Control Head	1	
5(7-F)	WY743Z	Erase Head	1	
5(7-G)	XAMQ27P100W	Cds Lamp	1	

Ref. No.	Part No.	Part Name & Description	Pcs / Set	Remarks
8(7-A,7-B) 11(4-B)	XAMQ27P20W	Pilot Lamp	5	
12(2-H)	XAMR10P100	Lamp	2	
12(7-J)	XBA2C10TR0	Fuse (1A)	1	
12(7-I)	XBA2C16TR0	Fuse (1.6A)	1	
12(7-I)	XBAVSF063ETS	Fuse (630mA)	2	
12(7-I)	XBAVSF315ETS	Fuse (3.15A)	1	

Ref. No.		Part No.	Part Name & Description	Pcs / Set	Remarks
			Nut		
9		XNG2EFXS		2	
7,9,12,13		XNG3EFXS		8	
7		XNG4EFXS		8	
6,9		XNG5EFXS		2	
			Solenoid Pin		
7		XRHV3XA		4	
8		XRHZ4+11FX		1	
6		XRHZ4XC		1	
			Screw		
6,7,8,10		XSN2+10FXS		18	
6		XSN2+16FXS		2	
5		XSN2+4FXS		3	
5		XSN2+6FXS		1	
11		XSN26+4FXS		2	
5		XSN26+6FXS		5	
13		XSN3+14FXS		2	
9		XSN3+20FXS		1	
10		XSN3+30FXS		1	
5		XSN3+6BNS		4	
11,13		XSN3+6FXS		6	
6		XSN3+8FXS		1	
5		XSN4+18FXS		2	
8		XSN4+25FXS		4	
14		XSN4+28FXKS		4	
5		XSN4+8BNS		2	
12		XSNV3+8RS		2	
5		XSS3+10FXS		3	
5		XSS3+8FXS		1	
8		XSS4+8FXS		1	
14		XST4+10FNS		4	
12		XTN3+5BFXS		2	

Ref. No.		Part No.	Part Name & Description	Pcs / Set	Remarks
6,8,11,12		XTN3+6BFXS		10	
12		XTN3+8BFXKS		9	
6,8,10,12		XTN3+8BFXS		29	
12		XTV3+5FXS		4	
13		XTV3+6BFXK		5	
8,11,12		XTV3+6FX		7	
9,12		XTV3+6FXS		8	
12		XTV4+8BFXS		1	
			Snap Ring		
6,9		XUB10FP		2	
9		XUB5FP		1	
6,9,12		XUC15FP		3	
6,7,9		XUC2FP		29	
7,8		XUC25FP		6	
6,7,8,9,10,11		XUC3FP		25	
5,6,7,10,11		XUC4FP		10	
6,11		XUC5FP		6	
5		XUC7FP		1	
			Set Screw		
6		XVE3A5FXKS		2	
9		XVE3A6FXS		1	
5		XVE3BFXS		2	
			Spring Washer		
5,6,7,8,10		XWA2AFX		14	
5		XWA26AFX		4	
5,6,9,10,11,12,13		XWA3AFX		14	
9		XWA3BFX		1	
5,7,8,12		XWA4AFX		13	
			Flat Washer		
6		XWE4FX		1	
5		XWG2AFX		3	
11		XWG26DFX		2	

Ref. No.		Part No.	Part Name & Description	Pcs / Set	Remarks
5		XWG3D6FX		1	
6,11		XWG3DFX		5	
7,8,9,10		XWG3FX		11	
5		XWG4D10FX		2	
5,7		XWG4D9FX		5	
6		XWG4FX		3	
6		XWG5FX		3	
6		XWG6FX		2	
13		XWS8AW		2	
			Polyslider Washer		
6		XWXV10D		2	
7,9		XWXV10F16		2	
6,9		XWXV2A		2	
9		XWXV2A4		6	
6,9		XWXV3A6		5	
7		XWXV3D		1	
7		XWXV3D6		5	
9		XWXV4A		2	
10		XWXV4D9		2	
7		XWXV5A9		1	
9		XWXV5D8		2	
9		XWXV5F		3	
7		XWXV5F10		2	
9		XWXV5F9		1	
7		XWXV6F12		1	
7		XWXV8H12		1	
			Fiber Washer		
8		XWYV3A		1	
6		XWYV3D9		1	
8		XWYV4A		1	
11		XWYV4D		1	
11		XWYV5D		1	

Ref. No.		Part No.	Part Name & Description	Pcs / Set	Remarks
			Mylar Washer		
9		XWZV4D		1	
14		XWZV4D9		4	
			Screw		
11		XYN2+F4FXS		4	
12		XYN26+C4FXS		4	
11		XYN26+C6FXS		2	
13		XYN3+C10FXKS		2	
5		XYN3+C10FXS		1	
7,9		XYN3+C12FXS		4	
11		XYN3+C14FXS		2	
12		XYN3+C4FXS		2	
12,13		XYN3+C6FXKS		4	
5,6,7,8,9,10, 11,12,14		XYN3+C6FXS		75	
7,8,9		XYN3+C8FXS		5	
7		XYN3+F20FXS		1	
5,6,7,8,9		XYN3+F6FXS		53	
5		XYN3+F8FXS		2	
5,7,9		XYN4+C10FXS		12	
14		XYN4+C8FXKS		4	
12,14		XYN4+C8FXS		5	
8,12		XYN4+F8FXS		2	
			Set Screw		
5,9		XXE3DFXKS		4	
7		XXE4D4FP		2	
6		XXE4D4FX		1	
8,9		XXE4D5FXKS		4	
5		XXE4D6FXKS		3	

ELECTRICAL REPLACEMENT PARTS LIST

Model No. NV-5130A-E/-A/-B/-EF

Notes:
1. Be sure to make your orders of replacement parts according to this list.
2. IMPORTANT SAFETY NOTICE
   Components identified by shade have special characteristics important for safety.
   When replacing any of these components, use only the original ones.

Notes:
1. Unless otherwise specified.
   All resistors are in OHMS (Ω), 1/4W ± 5% carbon.
   K = 1,000 Ω, M = 1,000 KΩ
   All capacitors are in MICROFARADS (μF), ± 10%, P = μμF.

Ref. No.		Part No.	Part Name & Description	Pcs / Set	Remarks
			Power Supply Circuit Board Assy	1	
			Control Section Assy	(1)	
			Servo Control Circuit Board Assy	1	
			Audio Circuit Board Assy	1	
			Video Playback Circuit Board Assy	1	
			Head & Recording Circuit Board Assy	1	
			Transport Control Circuit Board Assy	1	
			Sub-Transport Control Circuit Board Assy	1	
			Video Recording Circuit Board Assy	1	
			Colour Playback Circuit Board Assy	1	
			Solenoid Drive Circuit Board Assy	1	
			Recording Control Circuit Board Assy	1	
			Line Filter Assy	1	
			Jack Board Assy	1	
			Connector Assy	1	
			Wiring Assy	1	
			15P Socket Assy	1	
			4P Connector Assy	1	
			Lamp Circuit Board Assy	1	
			Solenoid Circuit Board Assy	1	
			Power SW Section Assy	1	
			DC Motor Assy	1	
R6517		ERC12GK275	Solid 1/2W 2.7M	1	
		VGN0928	Name Plate	1	
		VJR3	Clamper	1	
		VMA1201	Angle, Connector	1	
		VMA1585	Bracket, Micro Switch	1	
		VMB0266	Actuator	2	

Ref. No.		Part No.	Part Name & Description	Pcs / Set	Remarks
		VMZ0111	Fuse Cover	1	
		VMZ0124	Cover	2	
		VMZ0125	Cover	2	
		VMZ0127	Fiber	1	
S6521		VSM0019	Mocrio Switch	1	
			Fuses		
F6501		XBA2C10TR0	1A	1	
F6504		XBA2C16TR0	1.6A	1	
F6502, 6503		XBAVSF063ETS	0.63A	2	
F6505		XBAVSF315ETS	3.15A	1	
			Screws		
		XSNV3+8RS		2	
		XTN3+6BFXK		5	
		XTV3+6FX		9	
		XTV3+8FX		2	
		XYN2+F4FX		4	
		XYN3+C6FXKS		2	
		XYN3+C6FXS		4	
		XYN3+F6FXS		5	
		XYN3+F8FXS		2	
		XYN3+F10FXS		2	
		XYN3+F20FXS		2	
		XYN4+F8FXS		2	

POWER SUPPLY CIRCUIT BOARD ASSY

Ref. No.		Part No.	Part Name & Description	Pcs / Set	Remarks
			Transistor		
TR101		2SC1318		1	
TR102		2SC828A		1	
TR103		2SA564A		1	
TR104		2SA699		1	

Ref. No.	Part No.	Part Name & Description	Pcs / Set	Remarks
TR105	2SA564A		1	
TR106	2SA699		1	
		Diodes		
D101-104	10E1		4	
D105	RD6A	Zener	1	
D106-109	10E1		4	
D110	RD6A	Zener	1	
D111, 112	MA150LF		2	
D113	RD12EC	Zener	1	
		Resistors		
R102	ERD14VJ102	1K	1	
R103	ERD14VJ332	3.3K	1	
R104	ERD14VJ102	1K	1	
R105	ERD14VJ471	470	1	
R106	EVN22AA00B32	Variable 300	1	
R107	ERD14VJ681	680	1	
R109, 110	ERD14VJ272	2.7K	2	
R111	ERD14VJ102	1K	1	
R112	ERD14VJ681	680	1	
R113	EVN22AA00B32	Variable 300	1	
R114, 115	ERD14VJ471	470	2	
R116	ERD14VJ222	2.2K	1	
R117	ERD14VJ272	2.7K	1	
R118	ERQ12HJ100	Metal 10	1	
R119	ERD14VJ472	4.7K	1	
R120	ERD14VJ562	5.6K	1	
C101~104	ECQM05104KZ	Myler 50V 0.1	4	
C105	ECQM05333KZB	Myler 50V 0.033	1	
C106	ECEA25V100L	Electrolytic 25V 100	1	
C107	ECEA25V4R7L	Electrolytic 25V 4.7	1	
C108	ECQM05102KZB	Myler 50V 0.001	1	
C109	ECEA25V47L	Electrolytic 25V 47	1	

Ref. No.	Part No.	Part Name & Description	Pcs / Set	Remarks
C110-113	ECQM05333KZB	Myler 50V 0.033	4	
C114	ECEA25V47L	Electrolytic 25V 47	1	
C115	ECQM05103KZB	Myler 50V 0.01	1	
C117	ECQM05102KZB	Myler 50V 0.001	1	
C118	ECEA25V220L	Electrolytic 25V 220	1	
C119	ECEA16V220LU	Electrolytic 16V 220	1	
C120	ECEA25V47L	Electrolytic 25V 47	1	
		Miscellaneous		
TP101~104	VJH23	Check Terminal	4	
	VJH12	Check Terminal	1	
	VJP5016	Pin	1	
	VJP5018A	15Pin Housing	1	
	VJR3	Clamper	1	
	VMA1329	Heat Sync	1	
	VQL322B15	Assy No. Label	1	
	XNG3EFXS	Nut	2	
	XYN3+C10FXS	Screw	2	
	XTV3+8BFX	Screw	4	

HEAD & RECORDING AMP CIRCUIT BOARD

		Transistors		
TR501	2SC1226		1	
TR502	2SC1359		1	
TR503	2SC828		1	
TR504, 505	2SC1359		2	
TR506	2SA564		1	
TR507, 508	2SC1359		2	
TR509	2SC828		1	
		Resistors		
R501	EVN22AA00B12	Variable 100	1	
R502	ERD14VJ392	3.9K	1	

Ref. No.		Part No.	Part Name & Description	Pcs / Set	Remarks
R503		ERD14VJ472	4.7K	1	
R504, 505		ERX1ANJ330	Metal 1W 33	2	
R506		ERD14VJ100	10	1	
R507		ERD14VJ680	68	1	
R508, 509		ERD14VJ101	100	2	
R510, 511		ERD14VJ181	180	1	
R512		ERD14VJ100	10	1	
R513		ERD14VJ101	100	1	
R514		ERD14VJ154	150K	1	
R515		ERD14VJ153	15K	1	
R516		EVNK4AA00B13	Variable 1K	1	
R517		ERD14VJ102	1K	1	
R518		ERD14VJ103	10K	1	
R519		ERD14VJ562	5.6K	1	
R520		ERD14VJ823	82K	1	
R521		ERD14VJ153	15K	1	
R522		ERD14VJ332	3.3K	1	
R523		ERD14VJ330	33	1	
R524		ERD14VJ102	1K	1	
R525		ERD14VJ222	2.2K	1	
R526		ERD14VJ154	150K	1	
R527		ERD14VJ153	15K	1	
R528		ERD14VJ391	390	1	
R529		ERD14VJ102	1K	1	
R530		ERD14VJ103	10K	1	
R531		ERD14VJ562	5.6K	1	
R532		ERD14VJ823	82K	1	
R533		ERD14VJ153	15K	1	
R534		ERD14VJ332	3.3K	1	
R535		ERD14VJ330	33	1	
R536		ERD14VJ102	1K	1	
R537		ERD14VJ222	2.2K	1	

Ref. No.		Part No.	Part Name & Description	Pcs / Set	Remarks
R538		EVNK4AA00B23	Variable 2K	1	
R539		ERD14VJ563	56K	1	
R540		ERD14VJ153	15K	1	
R541		ERD14VJ102	1K	1	
R542		ERD14VJ331	330	1	
R543		ERD14VJ102	1K	1	
R544		ERD14VJ563	56K	1	
R545		ERD14VJ153	15K	1	
R546		ERD14VJ330	33	1	
			Capacitors		
C501		ECQM05473KZ	Myler 50V 0.047	1	
C502, 503		ECEA16V10L	Electrolytic 16V 10	2	
C504		ECQM05103KZ	Myler 50V 0.01	1	
C505		ECQM05182KZ	Myler 50V 0.0018	1	
C506, 507		ECQM05103KZ	Myler 50V 0.01	2	
C508		ECV1ZW10X32	Trimmer 1W 1-10pF	1	
C509		ECEA50V1L	Electrolytic 50V 1	1	
C510		ECQM05473KZ	Myler 50V 0.047	1	
C512-514		ECQM05103KZ	Myler 50V 0.01	3	
C515		ECQM05473KZ	Myler 50V 0.047	1	
C516		ECQM05103KZ	Myler 50V 0.01	1	
C517		ECV1ZW10X32	Trimmer 1W 1-10pF	1	
C518		ECEA50V1L	Electrolytic 50V 1	1	
C519		ECQM05473KZ	Myler 50V 0.047	1	
C521-523		ECQM05103KZ	Myler 50V 0.01	3	
C524, 525		ECQM05473KZ	Myler 50V 0.047	2	
C526		ECQM05103KZ	Myler 50V 0.01	1	
C527		ECQS1331KZ	Styrol 125V 330P	1	
C528		ECEA50V1L	Electrolytic 50V 1	1	
			Coils		
L501		VLQ7H102J	Coils 1mH	1	
L502		ELQ2P1	High-Frequency 1μH	1	
L503		VLQ5H180K	18μH	1	

Ref. No.		Part No.	Part Name & Description	Pcs / Set	Remarks
L504, 505		ELQ2P1	High-Frequency 1μH	2	
L506		VLQ5H180K	18μH	1	
L507		ELQ2P1	High-Frequency 1μH	1	
L508		VLT12	High-Frequency	1	
L509		VLQ5H221K	220μH	1	
			Transformers		
T501, 502		ELT10S932	High-Frequency	2	
			Relay		
K501		VSY206	Relay	1	
			Miscellaneous		
P501		VJP57	4 Pin Connector	1	
		VJH54	Check Terminal	3	
		VQL322F2	Assy No. Label	1	
		VSC68	Shield Case	1	
		VSC69	Shield Case	1	
		VSC70	Shield Case	1	
		XTV3+8BFX	Screw	1	

VIDEO RECORDING CIRCUIT BOARD ASSY

Ref. No.		Part No.	Part Name & Description	Pcs / Set	Remarks
			IC		
IC801		AN302	AGC	1	
			Transistors		
TR801-805		2SC828		5	
TR806, 807		2SC269		2	
TR808, 809		2SC828		2	
TR810		2SA564		1	
TR811		2SC828		1	
TR812		3SK39	FET	1	
TR813-823		2SC828		11	
TR824		2SC1317		1	

Ref. No.		Part No.	Part Name & Description	Pcs / Set	Remarks
			Diodes		
D801-806		MA150	High Speed Switching	6	
D809, 810		MA150	High Speed Switching	2	
			Resistors		
R802		ERD14VJ182	1.8K	1	
R803		ERD14VJ221	220	1	
R804		ERD14VJ683	68K	1	
R805		ERD14VJ223	22K	1	
R806		ERD14VJ102	1K	1	
R807, 808		ERD14VJ153	15K	2	
R809		ERD14VJ182	1.8K	1	
R810		ERD14VJ683	68K	1	
R811		ERD14VJ223	22K	1	
R812		ERD14VJ102	1K	1	
R813, 814		ERD14VJ153	15K	2	
R815		ERD14VJ103	10K	1	
R816		ERD14VJ473	47K	1	
R817		ERD14VJ273	27K	1	
R819, 820		ERD14VJ105	1M	2	
R821		ERD14VJ331	330	1	
R822		ERD14VJ272	2.7K	1	
R823		ERD14VJ682	6.8K	1	
R825		EVNK4AA00B53	Variable 5K	1	
R826		ERD14VJ222	2.2K	1	
R827		ERD14VJ332	3.3K	1	
R828		EVN22AA00B32	Variable 300	1	
R829		ERD14VJ561	560	1	
R830		ERD14VJ221	220	1	
R831		ERD14VJ223	22K	1	
R832		ERD14VJ222	2.2K	1	
R833, 834		ERX14TXF2201	Metal ±1% 220	2	
R835		ERD14VJ151	150	1	

Ref. No.		Part No.	Part Name & Description			Pcs / Set	Remarks
R836		ERX14TXF3300	Metal	±1%	330	1	
R837		ERD14VJ682			6.8K	1	
R838		EVNK4AA00B13	Variable		1K	1	
R839		ERD14VJ682			6.8K	1	
R840		ERX14TXF3300	Metal	±1%	330	1	
R841, 842		ERD14VJ101			100	2	
R843		ERD14VJ103			10K	1	
R844		ERD14VJ152			1.5K	1	
R845		ERD14VJ222			2.2K	1	
R847		ERD14VJ562			5.6K	1	
R848, 849		ERD14VJ153			15K	2	
R850		ERD14VJ332			3.3K	1	
R851		ERD14VJ152			1.5K	1	
R852		ERD14VJ151			150	1	
R853		ERD14VJ470			47	1	
R856		ERD14VJ102			1K	1	
R857		ERD14VJ122			1.2K	1	
R858		ERD14VJ332			3.3K	1	
R859		ERD14VJ103			10K	1	
R860		ERD14VJ682			6.8K	1	
R861		ERD14VJ683			68K	1	
R862		ERD14VJ393			39K	1	
R863		ERD14VJ332			3.3K	1	
R864		ERD14VJ222			2.2K	1	
R865		ERD14VJ470			47	1	
R866		ERD14VJ122			1.2K	1	
R867		ERD14VJ222			2.2K	1	
R868		ERD14VJ221			220	1	
R869		ERD14VJ681			680	1	
R870		ERD14VJ562			5.6K	1	
R871		ERD14VJ150			15	1	
R872		ERD14VJ331			330	1	
R873		ERD14VJ472			4.7K	1	
R874		ERD14VJ103			10K	1	
R875		ERD14VJ221			220	1	
R876		ERD14VJ103			10K	1	
R877		ERD14VJ562			5.6K	1	
R878		ERD14VJ103			10K	1	
R879		ERD14VJ222			2.2K	1	
R880		ERD14VJ472			4.7K	1	
R881		ERD14VJ182			1.8K	1	
R882		ERD14VJ123			12K	1	
R883, 884		ERD14VJ183			18K	2	
R885		ERD14VJ182			1.8K	1	
R886		ERD14VJ221			220	1	
R887		ERD14VJ102			1K	1	
R888		ERD14VJ222			2.2K	1	
R889		ERD14VJ123			12K	1	
R890		ERD14VJ392			3.9K	1	
R891		ERD14VJ122			1.2K	1	
R892		ERD14VJ330			33	1	
R893		ERD14VJ561			560	1	
R894		EVNK4AA00B13	Variable		1K	1	
R895		ERD14VJ333			33K	1	
R896		ERD14VJ392			3.9K	1	
R897		ERD14VJ222			2.2K	1	
R898		ERD14VJ221			220	1	
R899		ERD14VJ222			2.2K	1	
R8100		ERD14VJ223			22K	1	
R8101, 8102		ERD14VJ562			5.6K	2	
R8103		ERD14VJ223			22K	1	
R8104		ERD14VJ331			330	1	
R8105		EVN22AA00B32	Variable		300	1	
R8106		ERD14VJ102			1K	1	

Ref. No.	Part No.	Part Name & Description			Pcs / Set	Remarks
R8107, 8108	ERD14VJ222			2.2K	2	
R8109	ERD14VJ680			68	1	for NV-5130A-EF only
R8110	ERD14VJ682			6.8K	1	
R8111	ERD14VJ103			10K	1	
R8112	ERD14VJ681			680	1	
R8113	ERD14VJ102			1K	1	
R8114	ERD14TJ181			180	1	
R8115	ERD14TJ121			120	1	
R8116	ERD14VJ154			150K	1	(for NV-5130A-E/-B/-A)
		Capacitors				
C801, 802, 804	ECEA16V47L	Electrolytic	16V	47	3	
C806, 807	ECKC1H103PF3	Ceramic	50V	0.01	2	
C809, 810	ECEA16V47L	Electrolytic	16V	47	2	
C811	ECKC1H103PF3	Ceramic	50V	0.01	1	
C812	ECEA50MR15	Electrolytic	50	0.15	1	
C813	ECEA16V47L	Electrolytic	16V	47	1	
C814	ECEA16N47	Non-Polarity	16V	47	1	
C815	ECQS1271KZ	Styrol	125V	270P	1	
C816	ECEA16N4R7	Non-polarity Electrolytic	16V	4.7	1	
C817	ECEA16V47L	Electrolytic	16V	47	1	
C818	ECEA50MR15	Electrolytic	50V	0.15	1	
C819	VCCD1H270JC	Ceramic	10^4V	27P	1	
C820	ECV1ZW20X32	Trimmer	1W	1-20pF	1	
C821	VCCD1H390JC	Ceramic	10^4V	39P	1	
C822	ECEA50V1L	Electrolytic	50V	1	1	
C823	ECKC1H103PF3	Ceramic	10^4V	0.01	1	
C824	ECQS1391KZ	Styrol	125V	390	1	
C825	ECQS1271KZ	Styrol	125V	270	1	
C826	ECKC1H103PF3	Ceramic	10^4V	0.01	1	
C827	ECEA50V1L	Electrolytic	50V	1	1	
C828	ECEA16V100L	Electrolytic	16V	100	1	
C829	ECKC1H103PF3	Ceramic	10^4V	0.01	1	

Ref. No.	Part No.	Part Name & Description			Pcs / Set	Remarks
C830	ECKC2H471KA3	Ceramic	10^5V	470P	1	
C831	ECEA16V47L	Electrolytic	16V	47	1	
C832	ECQM05104KZ	Myler	50V	0.1	1	
C833, 834	ECKC1H103PF3	Ceramic	50V	0.01	2	
C835, 836	ECEA50V1L	Electrolytic	50V	1	1	
C837	ECKC1H102KB4	Ceramic	10^4V	0.001	1	
C838	ECKC1H103PF3	Ceramic	10^4V	0.01	1	
C839	ECKC2H181KA3	Ceramic	10^5V	180P	1	
C840	ECCC1H121KC3	Ceramic	10^4V	120P	1	
C841	ECKC1H103PF3	Ceramic	10^4V	0.01	1	
C842	ECEA16V10L	Electrolytic	16V	10	1	
C843	ECCC1H270KC3	Ceramic	10^4V	27P	1	
C844	ECQM05473KZ	Myler	50V	0.047	1	
C845	ECQS1681KZ	Styrol	125V	680P	1	
C846	ECEA16V10L	Electrolytic	16V	10	1	
C847	ECCC1H180KC3	Ceramic	10^4V	18P	1	
C848	ECQS1561KZ	Styrol	125V	560P	1	
C849	ECQS1151KZ	Styrol	125V	150P	1	
C850, 851	ECKC1H103PF3	Ceramic	10^4V	0.01	2	
C852, 853	ECEA50V1L	Electrolytic	50V	1	2	
C854	ECEA25V4R7L	Electrolytic	25V	4.7	1	
C855	ECKC1H103PF3	Ceramic	10^4V	0.01	1	
C856	ECCC1H390KC3	Ceramic	10^4V	39P	1	
C857	ECEA25V4R7L	Electrolytic	25V	4.7	1	
C858	ECKC1H103PF3	Ceramic	10^4V	0.01	1	
C859, 860	ECEA16V10L	Electrolytic	16V	10	2	
C861, 862	ECKC1H103PF3	Ceramic	10^4V	0.01	2	
C863, 864	ECEA16V10L	Electrolytic	16V	10	2	
C865	ECCC1H101KC3	Ceramic	10^4V	100P	1	
C866	ECCD1H050DC	Ceramic	10^4V	5P	1	(for NV-5130A-EF only)
C867	ECKC2H471KA3	Ceramic	10^5V	470P	1	(for NV-5130A-EF only)
C868-870	ECKD1H103PF	Ceramic	10^4V	0.01	3	

Ref. No.		Part No.	Part Name & Description		Pcs / Set	Remarks
			Coils			
L802		VLQ5H101K	Inductance	100μH	1	
L803, 804		VLQ11	Inductance		2	
L805		ELQ2P1	High-frequency Choke		1	
L806		EIS10S243	High-frequency		1	
L807		VLQ5H221K	Felly	220μH	1	
L808		VLQ7H332J	Felly	3.3mH	1	
L809		VLQ5H390K	Felly	39μH	1	
L810		VLQ5H120K	Felly	12 H	1	
L811		VLQ5H221K	Felly	220μH	1	(for NV-5130A-E/-B/-A)
L812		VLQ5H221K	Felly	220μH	1	(for NV-5130A-EF)
			Transformers			
T801		ELT10S906	High-frequency		1	
T802		ELT10S932	High-frequency		1	
T803		ELT10S906	High-frequency		1	
			Block Filters			
FL801		VLF0014	Low Pass Filter		1	(for NV-5130A-E/-B/-EF)
FL801		VLF0015A	Low-pass Filter		1	(for NV-5130A-A)
FL802		VLF0013	Low-pass Filter		1	(for NV-5130A-E/-B/-EF)
FL802		VLF0013A	Low-pass Filter		1	(for NV-5130A-A)
FL803		VLF0017	BPF		1	
FL804		VLF6	LPF		1	
			Delay Line			
DL801		ELT10Z608V				
			Oscillator			
X801		VSX0037	Crystal		1	
			Miscellaneous			
		VSC0100	Shield Case		1	
		VSC0101	Shield Case		1	
		VSC0102	Shield Case		1	
		VSC73	Shield Case		1	
		VJH54	Check Terminal		6	

Ref. No.		Part No.	Part Name & Description		Pcs / Set	Remarks
		VQL322117	Assy No. Label		1	(for NV-5130A-EF)
		VQL322116	Assy No. Lable		1	(for NV-5130A-E/-B)
		VQL322118	Assy No. Lable		1	(for NV-5130A-A)
		VMP177	Holder, Circuit Board		1	
		XTV3+8BFX	Screw		1	

VIDEO PLAYBACK CIRCUIT BOARD ASSY

Ref. No.		Part No.	Part Name & Description		Pcs / Set	Remarks
			ICs			
IC301		AN316	Dropout Compensator		1	
IC302		AN304	Limiter		1	
IC303		AN303	Noise Canceller		1	
			Transistors			
TR301		2SA564			1	
TR302		2SC1317			1	
TR303-306		2SC828			4	
TR307		2SA564			1	
TR308-311		2SC828			4	
			Diodes			
D301-305		MA150	High Speed Switching		5	
			Resistors			
R301		ERD14VJ153		15K	1	
R302		ERD14VJ331		330	1	
R303		ERD14VJ271		270	1	
R304		ERD14VJ122		1.2K	1	
R305		ERD14VJ821		820	1	
R306		ERD14VJ152		1.5K	1	
R307		ERD14VJ122		1.2K	1	
R308		ERD14VJ822		8,2K	1	
R309, 310		ERD14VJ391		390	2	
R311		ERD14VJ333		33K	1	
R312		EVNK4AA00B24	Variable	20K	1	

Ref. No.		Part No.	Part Name & Description	Pcs / Set	Remarks
R313		ERD14VJ101	100	1	
R314		ERD14VJ102	1K	1	
R315		ERD14VJ473	47K	1	
R316		ERD14VJ562	5.6K	1	
R317		ERD14VJ222	2.2K	1	
R318		ERD14VJ121	120	1	
R319		ERD14VJ183	18K	1	
R320		EVN22AA00B12	Variable 100	1	
R321		ERD14VJ102	1K	1	
R322		ERD14VJ101	100	1	(for NV-5130A-E/-B/-EF)
R322		ERD14VJ560	56	1	(for NV-5130A-A)
R323		ERD14VJ562	5.6K	1	
R324		ERD14VJ473	47K	1	
R325,326		ERD14VJ221	220	2	
R327		ERD14VJ182	1.8K	1	
R328		EVN22AA00B12	Variable 100	1	
R329		ERD14VJ123	12K	1	
R330		ERD14VJ222	2.2K	1	
R331		ERD14VJ101	100	1	
R332		ERD14VJ471	470	1	
R333		ERD14VJ333	33K	1	
R334		ERD14VJ153	15K	1	
R335		ERD14VJ182	1.8K	1	
R336		ERD14VJ272	2.7K	1	
R337		EVNK4AA00B53	Variable 5K	1	
R338		ERD14VJ222	2.2K	1	
R339		ERD14VJ153	15K	1	
R340		ERD14VJ393	39K	1	
R341		EVNK4AA00B14	Variable 10K	1	
R342		ERD14VJ153	15K	1	
R343		ERD14VJ393	39K	1	
R344		ERD14VJ102	1K	1	

Ref. No.		Part No.	Part Name & Description	Pcs / Set	Remarks
R345		ERD14VJ272	2.7K	1	
R346		ERD14VJ271	270	1	
R347		ERD14VJ102	1K	1	
R348		ERD14VJ104	100K	1	
R350		ERD14VJ560	56	1	
R351		ERD14VJ474	470K	1	
R352		ERD14VJ332	3.3K	1	
R353		EVNK4AA00B13	Variable 1K	1	
R354		ERD14VJ391	390	1	
R355		ERD14VJ473	47K	1	
R356		ERD14VJ474	470K	1	
R357		ERD14VJ152	1.5K	1	
R358		ERD14VJ221	220	1	
R359, 360		ERD14VJ183	18K	2	
R361		ERD14VJ182	1.8K	1	
R362		ERD14VJ681	680	1	
R363		ERD14VJ153	15K	1	
R364		ERD14VJ222	2.2K	1	
R365		ERD14VJ102	1K	1	
R366		ERD14VJ330	330	1	
R367		ERD14VJ121	120	1	
R368		ERD14VJ332	3.3K	1	
R369		ERD14VJ561	560	1	
R370		ERD14VJ122	1.2K	1	
R371		ERD14VJ271	270	1	
R373		ERD14VJ681	680	1	
R374		ERD14TJ750	75	1	
			Capacitors		
C301		ECEA50V1L	Electrolytic 50V 1	1	
C302, 303		ECEA25V4R7L	Electrolytic 25V 4.7	2	
C304		ECKC1H103PF3	Ceramic 10^4V 0.01	1	
C305		ECEA16V47L	Ceramic 16V 47	1	

Ref. No.		Part No.	Part Name & Description	Pcs / Set	Remarks
C306		ECQM05152KZ	Myler 50V 0.0015	1	
C307		ECEA50V1L	Electrolytic 50V 1	1	
C308-313		ECKC1H103PF3	Ceramic 10^4V 0.01	6	
C314		ECEA50V1L	Electrolytic 50V 1	1	
C315		ECCC1H101KC3	Ceramic 10^4V 100P	1	
C316		ECKC1H102KB4	Ceramic 10^4V 0.001	1	
C317		ECEA50V1L	Electrolytic 50V 1	1	
C318-321		ECKC1H103PF3	Ceramic 10^4V 0.01	4	
C322		ECEA6V100L	Electrolytic 6V 100	1	
C323-325		ECKC1H103PF3	Ceramic 10^4V 0.01	3	
C326		ECEA16V10L	Electrolytic 16V 10	1	
C327		ECKC1H103PF3	Ceramic 10^4V 0.01	1	
C328		ECEA16V47L	Electrolytic 16V 47	1	
C329		ECEA6V470L	Electrolytic 6V 470	1	
C330		ECEA16V100L	Electrolytic 16V 100	1	
C331		ECQS1561KZ	Styrol 125V 560P	1	(for NV-5130A-E/-B/-EF)
C331		ECKC1H681KB4	Ceramic 10^4V 680P	1	(for NV-5130A-A)
C332, 333		ECEA6V220L	Electrolytic 6V 220	2	
C334		ECCC1H470KC3	Ceramic 10^4V 47P	1	(for NV-5130A-E -B/-EF)
C334		ECCC1H101KC3	Ceramic 10^4V 100P	1	(for NV-5130A-A)
C335		ECEA16V47L	Electrolytic 16V 47	1	
C336		ECEA6V220L	Electrolytic 6V 220	1	
C337		ECEA16V47L	Electrolytic 16V 47	1	
C338		ECEA6V220L	Electrolytic 6V 220	1	
C339		ECKC1H103PF3	Ceramic 10^4V 0.01	1	
C340		ECEA6V220L	Electrolytic 6V 220	1	
C341		ECKC1H103PF3	Ceramic 10^4V 0.01	1	
C342		ECKC2H331KA3	Ceramic 10^5V 330P	1	
C343-345		ECEA16V47L	Electrolytic 16V 47	3	
C346		ECCC1H101KC3	Ceramic 10^4V 100P	1	
C347		ECEA16V10L	Electrolytic 16V 10	1	
C348		ECEA16V47L	Electrolytic 16V 47	1	

Ref. No.		Part No.	Part Name & Description	Pcs / Set	Remarks
C349		ECQM05183KZ	Myler 50V 0.018	1	
C350		ECEA16V47L	Electrolytic 16V 47	1	
C351		ECEA16N10	Non-Polarity Electrolytic 16V 10	1	
C352		ECKC1H103PF3	Ceramic 10^4V 0.01	1	
C353		ECEA16V47L	Electrolytic 16V 47	1	
C354		ECQM05183KZ	Myler 50V 0.018	1	
C355		ECCC1H180KC3	Ceramic 10^4V 18P	1	
C356		ECEA10V1000L	Electrolytic 10V 1000	1	
C357		ECEA50MR1	Aluminum Electrolytic 50V 0.1	1	
C358		ECKC1H102KB4	Ceramic 10^4V 0.001	1	
C359		ECCC1H390KC3	Ceramic 10^4V 39P	1	
C360		ECEA16V100L	Electrolytic 16V 100	1	
C361		ECEA25V4R7L	Electrolytic 25V 4.7	1	
C362		ECEA16V10L	Electrolytic 16V 10	1	
C363		ECCC1H180KC3	Ceramic 10^4V 18P	1	
C364		ECQS1561KZ	Styrol 125V 560P	1	
C365		ECQS1151KZ	Styrol 125V 150P	1	
C366-369		ECKC1H103PF3	Ceramic 10^4V 0.01	4	
C370		ECEA16V10L	Electrolytic 16V 10	1	
C371		ECKC1H103PF3	Ceramic 10^4V 0.01	1	
C372		ECQS1221KZ	Styrol 125V 220P	1	(for NV-5130A-EF)
			Coils		
L301, 302		VLQ5H221K	220μH	2	
L303, 304		VLQ5H100K	10μH	2	
L305, 306		VLQ5H221K	220μH	2	
L307		VLQ5H560K	56μH	1	
L308		VLQ5H151K	150μH	1	
L309, 310		VLQ5H221K	220μH	2	
L311		VLQ5H390K	39μH	1	
L312, 313		VLQ5H221K	220μH	2	
L314		VLQ2P1		1	(for NV-5130A-E/-B/-A)
L314		VLQ5H820K	82μH	1	(for NV-5130A-EF)

Ref. No.	Part No.	Part Name & Description	Pcs / Set	Remarks
L315	VLQ2P1		1	(for NV-5130A-EF)
		Transformers		
T301	ELT10S905	High-Frequency	1	
T302	ELT10S906	High-Frequency	1	
		Block Filters		
FL301	VLF0016	High-pass Filter	1	
FL302	VLF0013	Low-Pass Filter	1	(for NV-5130A-E/-B/EF)
FL302	VLF0013A3	Low-Pass Filter	1	(for NV-5130A-A)
FL303	VLF0015	Low-Pass Filter	1	(for NV-5130A-E/-B/-EF)
FL303	VLF0014A2	Low-Pass Filter	1	(for NV-5130A-A)
FL304	VLF0012	Band-Pass-Filter	1	
		Delay Line		
DL301	EFDEN645A01	1H Delay	1	
DL302	ELT10Z711V		1	
		Oscillator		
X301	VSX0038	Crystal (4.76MHz)	1	
		Miscellaneous		
	VJH54	Check Terminal	6	
	VMP177	Holder, Circuit Board	1	
	VQL322D4	Assy No. Label	1	(for NV-5130A-E/-B)
	VQL322D12	Assy No. Label	1	(for NV-5130A-EF)
	VSC0105	Shield Case	1	
	VSC0106	Shield Case	1	
	VSC0107	Shield Case	1	
	XTV3+8BFX	Screw	1	

COLOUR PLAYBACK CIRCUIT BOARD ASSY

Ref. No.	Part No.	Part Name & Description	Pcs / Set	Remarks
		IC		
IC8201	M53273P	(Count Down)	1	
		Transistors		
TR8201	2SC828		1	
TR8202	3SK39	F.E.T.	1	
TR8203, 8204	2SC828		2	
TR8205	2SA564		1	
TR8206-8211	2SC828		6	
TR8212	2SA564		1	
TR8213-8227	2SC828		15	
		Diodes		
D8201, 8202	1S953		2	
D8203-8206	MA150		4	
D8207-8212	1S953		6	
D8213, 8214	1S1007		2	
D8215, 8216	1S953		2	
D8217	MX1	Variable Capacitance	1	
D8218	OA70		1	
D8219, 8220	MX1	Variable Capacitance	2	
D8221, 8222	1S953		2	
		Resistors		
R8201	ERD14VJ223	22K	1	
R8202	ERD14VJ392	3.9K	1	
R8203	ERD14VJ122	1.2K	1	
R8204	ERD14VJ390	39	1	
R8205	ERD14VJ151	150	1	
R8206	ERD14VJ221	220	1	
R8207	ERD14VJ102	1K	1	
R8208	ERD14VJ562	5.6K	1	
R8209	ERD14VJ154	150K	1	
R8210	ERD14VJ103	10K	1	
R8211	EVNK4AA00B53	Variable 5K	1	
R8212	ERD14VJ154	150K	1	(for NV-5130A-E/-B/-A)
R8213	ERD14VJ153	15K	1	
R8214	ERD14VJ222	2.2K	1	
R8215	ERD14VJ101	100	1	(for NV-5130A-E/-B/-A)
R8215	ERD14VJ470	47	1	(for NV-5130A-EF)

Ref. No.		Part No.	Part Name & Description	Pcs / Set	Remarks
R8216		ERD14VJ102	1K	1	
R8217		ERD14VJ101	100	1	
R8218		ERD14VJ153	15K	1	
R8219		ERD14VJ562	5.6K	1	
R8220		ERD14VJ331	330	1	
R8221		ERD14VJ102	1K	1	
R8222		ERD14VJ101	100	1	
R8223		EVN22AA00B32	Variable 300	1	
R8224		ERD14VJ102	1K	1	
R8225		ERD14VJ333	33K	1	
R8226		ERD14VJ562	5.6K	1	
R8227		ERD14VJ122	1.2K	1	
R8228		ERD14VJ121	120	1	
R8229		ERD14VJ560	56	1	
R8230		ERD14VJ221	220	1	
R8231		EVNK4AA00B13	Variable 1K	1	
R8232, 8233		ERD14VJ223	22K	1	
R8234		ERD14VJ222	2.2K	1	
R8235		ERD14VJ101	100	1	
R8236, 8237		ERD14VJ183	18K	2	
R8238		ERD14VJ470	47	1	
R8239		ERD14VJ182	1.8K	1	
R8240, 8241		ERD14VJ331	330	2	
R8242		ERD14VJ273	27K	1	
R8243		ERD14VJ332	3.3K	1	
R8244		ERD14VJ331	330	1	
R8245		ERD14VJ153	15K	1	
R8246, 8247		ERD14VJ222	2.2K	2	
R8248		ERD14VJ121	120	1	
R8249		ERD14VJ101	100	1	
R8250		ERD14VJ221	220	1	
R8251		ERD14VJ102	1K	1	

Ref. No.		Part No.	Part Name & Description	Pcs / Set	Remarks
R8252, 8253		ERD14VJ223	22K	2	
R8254		ERD14VJ222	2.2K	1	
R8255		ERD14VJ103	10K	1	
R8256		ERD14VJ331	330	1	
R8257		ERD14VJ681	680	1	
R8258		ERD14VJ221	220	1	
R8259		ERD14VJ332	3.3K	1	
R8260, 8261		ERD14VJ393	39K	2	
R8262		ERD14VJ332	3.3K	1	
R8263		ERD14VJ823	82K	1	
R8264		ERD14VJ104	100K	1	
R8265-8267		ERD14VJ222	2.2K	3	
R8268		ERD14VJ103	10K	1	
R8269		ERD14VJ682	6.8K	1	
R8270		ERD14VJ473	47K	1	
R8271		ERD14VJ103	10K	1	
R8272		EVNK4AA00B13	Variable 1K	1	
R8273		ERD14VJ331	330	1	
R8274		ERD14VJ473	47K	1	
R8275		ERD14VJ682	6.8K	1	
R8276		ERD14VJ222	2.2K	1	
R8277		ERD14VJ331	330	1	
R8278		ERD14VJ103	10K	1	
R8279		ERD14VJ101	100	1	
R8280		ERD14VJ333	33K	1	
R8281, 8282		ERD14VJ273	27K	2	
R8283		ERD14VJ822	8.2K	1	
R8284		ERD14VJ562	5.6K	1	
R8285		ERD14VJ272	2.7K	1	
R8286		ERD14VJ223	22K	1	
R8287		ERD14VJ682	6.8K	1	
R8288		ERD14VJ473	47K	1	

Ref. No.		Part No.	Part Name & Description	Pcs / Set	Remarks
R8289		ERD14VJ105	1M	1	
R8290		ERD14VJ473	47K	1	
R8291		ERD14VJ153	15K	1	
R8292		ERD14VJ222	2.2K	1	
R8293		ERD14VJ100	10	1	
R8294		ERD14VJ103	10K	1	
R8295		ERD14VJ331	330	1	
R8296		ERD14VJ682	6.8K	1	
R8297		ERD14VJ471	470	1	
R8298		ERD14VJ333	33K	1	
R8299		ERD14VJ103	10K	1	
R8300, 8301		ERD14VJ561	560	2	
R8302		ERD14VJ103	10K	1	
R8303		ERD14VJ221	220	1	
R8304		ERD14VJ823	82K	1	
R8305		ERD14VJ394	390K	1	
R8306		ERD14VJ823	82K	1	
R8307		ERD14VJ104	100K	1	
R8308		ERD14VJ222	2.2K	1	
R8309		ERD14VJ473	47K	1	
R8310		ERD14VJ562	5.6K	1	
R8311		ERD14VJ152	1.5K	1	
R8312		ERD14VJ121	120	1	
R8313		ERD14VJ473	47K	1	
R8314		ERD14VJ103	10K	1	(for NV-5130A-E/-B/-A)
R8314		ERD14VJ822	8.2K	1	(for NV-5130A-EF)
R8315		ERD14VJ122	1.2K	1	
R8316		ERD14VJ331	330	1	(for NV-5130A-E/-B/-A)
R8316		ERD14VJ221	220	1	(for NV-5130A-EF)
R8317		ERD14VJ561	560	1	
R8318		ERD14VJ102	1K	1	
R8319		ERD14VJ562	5.6K	1	

Ref. No.		Part No.	Part Name & Description	Pcs / Set	Remarks
R8320		ERD14VJ123	12K	1	
R8321		ERD14VJ102	1K	1	
R8322		ERD14VJ332	3.3K	1	
R8323		ERD14VJ272	2.7K	1	
R8324		ERD14VJ152	1.5K	1	
R8325, 8326		ERD14VJ392	3.9K	2	
R8327		ERD14VJ391	390	1	
R8328		EVNK4AA00B52	Variable 500	1	
R8329, 8330		ERD14VJ393	39K	2	
R8331		ERD14VJ392	3.9K	1	
R8332		ERD14VJ151	150	1	
R8333		ERD14VJ223	22K	1	
R8334		ERD14VJ103	10K	1	
R8335		ERD14VJ101	100	1	
R8336		ERD14VJ123	12K	1	
R8337		EVNK4AA00B23	Variable 2K	1	
R8338		ERD14VJ103	10K	1	
R8339		ERD14VJ472	4.7K	1	
R8340		ERD14VJ393	39K	1	
R8341		ERD14VJ152	1.5K	1	
R8342, 8343		ERD14VJ183	18K	2	
R8344, 8345		ERD14VJ102	1K	2	
R8346		ERD14TJ563	56K	1	(for NV-5130A-EF)
			Capacitors		
C8201		ECEA16V10L	Electrolytic 16V 10	1	
C8202		ECEA25V4R7L	Electrolytic 25V 4.7	1	
C8203		ECKC1H103PF3	Ceramic 10^4V 0.01	1	
C8204		ECEA50V1L	Electrolytic 50V 1	1	
C8205		ECKC1H103PF3	Ceramic 10^4V 0.01	1	
C8206		ECEA50V1L	Electrolytic 50V 1	1	
C8207		ECKC1H103PF3	Ceramic 10^4V 0.01	1	
C8208		ECEA16V10L	Electrolytic 16V 10	1	

Ref. No.		Part No.	Part Name & Description			Pcs / Set	Remarks
C8209		ECCC1H101KC3	Ceramic	10^4V	100P	1	
C8210		ECKC1H222KB4	Ceramic	10^4V	0.0022	1	
C8211		ECCC1H121KC3	Ceramic	10^4V	120P	1	
C8212		ECKC1H103PF3	Ceramic	10^4V	0.01	1	
C8213		ECQM05683KZ	Myler	50V	0.068	1	
C8214		ECEA16V10L	Electrolytic	16V	10	1	
C8215		ECKC1H103PF3	Ceramic	10^4V	0.01	1	
C8216		ECEA16V10L	Electrolytic	16V	10	1	
C8217-8219		ECKC1H103PF3	Ceramic	10^4V	0.01	3	
C8220		ECEA16V47L	Electrolytic	16V	47	1	
C8221, 8222		ECKC1H103PF3	Ceramic	10^4V	0.01	2	
C8223		ECEA16V10L	Electrolytic	16V	10	1	
C8224		ECCC1H100DC3	Ceramic	10^4V	10P	1	
C8225		ECV1ZW20X32	Trimmer	1W	1-20pF	1	
C8226		ECQS1561KZ	Styrol	125V	560P	1	
C8227		ECQS1151KZ	Styrol	125V	150P	1	
C8228, 8229		ECKC1H103PF3	Ceramic	10^4V	0.01	2	
C8230		ECEA16V10L	Electrolytic	16V	10	1	
C8231-8233		ECKC1H103PF3	Ceramic	50V	0.01	3	
C8234		ECEA16V47L	Electrolytic	16V	47	1	
C8235		ECKC1H103PF3	Ceramic	10^4V	0.01	1	
C8236		ECKC2H561KB3	Ceramic	10^5V	560P	1	
C8237		ECEA6V47L	Electrolytic	6V	47	1	
C8238		ECQS1331KZ	Styrol	125V	330P	1	
C8239, 8240		ECQM05152KZ	Myler	50V	0.0015	2	
C8241		ECQM05102KZ	Myler	50V	0.001	1	
C8242		ECQM05473KZ	Myler	50V	0.047	1	
C8243		ECEA16V47L	Electrolytic	16V	47	1	
C8244		ECKC1H103PF3	Ceramic	10^4V	0.01	1	
C8245		ECEA50MR33	Aluminum Electrolytic	50V	0.33	1	
C8246		ECQM05683KZ	Myler	50V	0.068	1	
C8247		ECQM05104KZ	Myler	50V	0.1	1	

Ref. No.		Part No.	Part Name & Description			Pcs / Set	Remarks
C8248		ECEA25V4R7L	Electrolytic	25V	4.7	1	
C8249		ECEA6V220L	Electrolytic	6V	220	1	
C8250		ECEA25V4R7L	Electrolytic	25V	4.7	1	
C8251		ECEA50V1L	Electrolytic	50V	1	1	
C8252		ECSZ16EF10	Tantalum	16V	10	1	
C8253		ECEA50V1L	Electrolytic	50V	1	1	
C8254		ECKC1H103PF3	Ceramic	10^4V	0.01	1	
C8255		ECQS1151KZ	Styrol	125V	150P	1	
C8256		ECQS1391KZ	Styrol	125V	390P	1	
C8257		ECQS1221KZ	Styrol	125V	220P	1	
C8258		ECQS1102KZ	Styrol	125V	0.001	1	
C8259, 8260		ECKC1H103PF3	Ceramic	10^4V	0.01	2	
C8261		ECEA16V10L	Electrolytic	16V	10	1	
C8262, 8263		ECKC1H103PF3	Ceramic	10^4V	0.01	2	
C8264		ECEA16V47L	Electrolytic	16V	47	1	
C8265		ECKC1H103PF3	Ceramic	10^4V	0.01	1	
C8266		ECKC1H102KB4	Ceramic	10^4V	0.001	1	
C8267, 8268		ECKC1H103PF3	Ceramic	10^4V	0.01	2	
C8269		ECEA16V47L	Electrolytic	16V	47	1	
C8270-8274		ECKC1H103PF3	Ceramic	10^4V	0.01	5	
C8275		ECEA16V47L	Electrolytic	16V	47	1	
C8276		ECEA6V47L	Electrolytic	6V	47	1	
C8277, 8278		ECQS1182JZ	Styrol	125V	0.0018	2	
C8279, 8280		ECQM05152KZ	Myler	50V	0.0015	2	
C8281		ECQM05332KZ	Myler	50V	0.0033	1	
C8282		ECQS1472KZ	Styrol	125V	0.0047	1	
C8283		ECEA16V10L	Electrolytic	16V	10	1	
C8284		ECEA50V1L	Electrolytic	50V	1	1	
C8285		ECQM05272KZ	Myler	50V	0.0027	1	
C8286		ECEA16V10L	Electrolytic	16V	10	1	
C8287		ECEA25V4R7L	Electrolytic	25V	4.7	1	
C8288		ECKC1H103PF3	Ceramic	10^4V	0.01	1	

Ref. No.		Part No.	Part Name & Description	Pcs / Set	Remarks
C8289		ECKC2H331KA3	Ceramic 10^5V 330P	1	(NV-5130A-E/-B/-A)
C8290		ECCC1H220KC3	Ceramic 10^4V 22P	1	(NV-5130A-EF)
			Coils		
L8201		VLQ5H8R2K	Ferry Inductance 8.2μH	1	
L8202		VLQ5H221K	Ferry Inductance 220μH	1	
L8203		ELT10S205	High-Frequency	1	
L8204-8206		VLQ5H221K	Ferry Inductance 220μH	3	
L8207		VLT21	High-Frequency	1	
L8208		VLT12	High-Frequency	1	
L8209		VLQ5H560K	High-Frequency 56μH	1	(for NV-5130A-EF)
			Transformers		
T8201-4		ELT10S906	High-Frequency	4	
			Block Filters		
FL8201		VLF6	Low-Pass	1	
FL8202		VLF0018	4.34MHz Band-Pass	1	
FL8203		EULBPF046	5.1M Band-Pass	1	
			Oscillator		
X8201		VSX0036	Crystal	1	
			Miscellaneous		
		VSC0096	Shield Case	1	
		VSC0097	Shield Case	1	
		VSC0098	Shield Case	1	
		VSC0099	Shield Case	1	
		VJH54	Check Terminal	15	
		VQL322114	Assy No. Label	1	(for NV-5130A-E/-B/-A)
		VQL322115	Assy No. Label	1	(for NV-5130A-EF)
		VMP177	Holder, Circuit Board	1	
		XTV3+8BFX	Screw	1	

Ref. No.		Part No.	Part Name & Description	Pcs / Set	Remarks
			METER CIRCUIT BOARD ASSY		
			Transistors		
TR3101-3105		2SC828		5	
			Diodes		
D3101, 3102		OA90		2	
D4101		10E1		1	
			Resistors		
R3101		ERD14VJ223	22K	1	
R3102		ERD14VJ472	4.7K	1	
R3103		ERD14VJ102	1K	1	
R3104		ERD14VJ181	180	1	
R3105		ERD14VJ152	1.5K	1	
R3106		ERD14VJ222	2.2K	1	
R3107		ERD14VJ223	22K	1	
R3108, 3109		ERD14VJ222	2.2K	2	
R3110		ERD14VJ102	1K	1	
R3111		ERD14VJ273	27K	1	
R3112		ERD14VJ224	220K	1	
R3113		ERD14VJ471	470	1	
R3114		EVNK4AA00B53	Variable 5K	1	
R4101		ERD14VJ474	470K	1	
			Capacitors		
C3101		ECEA6V100L	Electrolytic 6V 100	1	
C3102		ECEA16V47L	Electrolytic 16V 47	1	
C3103		ECEA16V220LU	Electrolytic 16V 220	1	
C3104		ECCC1H270KC3	Ceramic 10^4V 27P	1	
C3105, 3106		ECEA50V1L	Electrolytic 50V 1	2	
C3107		ECEA25V4R7L	Electrolytic 25V 4.7	1	
			Coils		
L3101		VLQ80F221K		1	
			Relays		
K4101		VSY104U		1	

Ref. No.		Part No.	Part Name & Description	Pcs / Set	Remarks
			Miscellaneous		
		VQL322A20	Assy No. Label	1	
		VJH24	Check Terminal	4	
			CONTROL SECTION ASSY		
		VMA2478	Angle, Circuit Board	2	
			Audio Circuit Board Assy	1	
			Servo Control Circuit Board	1	
		VQL322K23	Assy No Label	1	
		XTV3+6BFX	Screw	8	
			SERVO CONTROL CIRCUIT BOARD ASSY		
			Transistors		
TR201, 202		2SC828		2	
TR102		2SA564		1	
TR204, 208		2SC828		5	
TR209		2SA564		1	
TR210-214		2SC828		5	
TR215		2SC1226A		1	
TR216-223		2SC828		8	
TR224		2SA564		1	
TR225-232		2SC828		8	
TR233		2SA564		1	
TR234-239		2SC828		6	
TR240		2SA684		1	
TR241		2SC828		1	
TR242		2SA564		1	
			IC		
IC201		AN301	VTR Servo Control Process	1	

Ref. No.		Part No.	Part Name & Description	Pcs / Set	Remarks
			Diodes		
D201-206		MA150LF	Si High Speed Switching	6	
D207		RD12EC	Si Zener	1	
D203, 209		MA150LF	Si	2	
D211, 212		MA150LF	Si	2	
D213, 214		OA90	Ge	2	
D215-218		MA150LF	Si	4	
D220-224		MA150LF	Si	5	
D225		VD1222		1	
D226-228		MA150LF	Si	3	
			Resistors		
R201		ERD14VJ564	560K	1	
R202		ERD14VJ223	22K	1	
R203		ERD14VJ103	10K	1	
R204		EVNK4AA00B54	Variable 50K	1	
R205		ERD14VJ332	3.3K	1	
R206		ERD14VJ103	10K	1	
R207, 208		ERD14VJ223	22K	2	
R209		ERD14VJ332	3.3K	1	
R210		ERD14VJ562	5.6K	1	
R211		ERD12TJ152	1/2W 1.5K	1	
R212		ERD14VJ563	56K	1	
R213-215		ERD14VJ103	10K	3	
R216		ERD12TJ152	1/2W 1.5K	1	
R217		ERD14VJ563	56K	1	
R218, 219		ERD14VJ103	10K	2	
R220		ERD14VJ562	5.6K	1	
R221, 224		ERD14VJ223	22K	4	
R225		ERD14VJ562	5.6K	1	
R226		ERD14VJ102	1K	1	
R227		ERD14VJ821	820	1	
R228		ERD14VJ103	10K	1	

Ref. No.		Part No.	Part Name & Description	Pcs / Set	Remarks
R229, 230		ERD14VJ333	33K	2	
R231		ERD14VJ473	47K	1	
R232		ERD14VJ101	100	1	
R233		ERD14VJ152	1.5K	1	
R234		ERD14VJ332	3.3K	1	
R235		ERD14VJ223	22K	1	
R236		ERD14VJ393	39K	1	
R237		ERD14VJ473	47K	1	
R238		ERD14VJ392	3.9K	1	
R239, 240		ERD14VJ103	10K	2	
R241		ERD14VJ563	56K	1	
R242		ERD14VJ560	56	1	
R243		ERD14VJ473	47K	1	
R245		ERD14VJ332	3.3K	1	
R247		ERD14VJ332	3.3K	1	
R248		EVNK4AA00B15	Variable 100K	1	
R249		ERD14VJ822	8.2K	1	
R250		ERD14VJ223	22K	1	
R251		ERD14VJ332	3.3K	1	
R252		ERD14VJ153	15K	1	
R253		ERD14VJ332	3.3K	1	
R254		ERD14VJ123	12K	1	
R255, 256		ERD14VJ563	56K	2	
R257		ERD14VJ332	3.3K	1	
R258		ERD14VJ473	47K	1	
R259, 260		ERD14VJ102	1K	2	
R261		ERD14VJ103	10K	1	
R262		ERD14VJ392	3.9K	1	
R263		ERD14VJ333	33K	1	
R264		ERD14VJ562	5.6K	1	
R265, 266		ERD14VJ103	10K	2	
R267		ERD14VJ183	18K	1	

Ref. No.		Part No.	Part Name & Description	Pcs / Set	Remarks
R268		ERD14VL101	100	1	
R269		ERD14VJ122	1.2K	1	
R270, 271		ERD14VJ222	2.2K	2	
R272		ERD14VJ103	10K	1	
R273		ERD14VJ473	47K	1	
R274		ERD14VJ333	33K	1	
R275		ERD14VJ222	2.2K	1	
R278		ERD14VJ332	3.3K	1	
R279		ERD14VJ153	15K	1	
R280		ERD14VJ223	22K	1	
R281, 282		ERD14VJ103	10K	2	
R283		ERD14VJ223	22K	1	
R284		ERD14VJ332	3.3K	1	
R285		EVNK4AA00B15	Variable 100K	1	
R286		ERD14VJ103	10K	1	
R287		ERD14VJ332	3.3K	1	
R288		ERD14VJ104	100K	1	
R289		ERD14VJ224	220K	1	
R290		EVNK4AA00B25	Variable 200K	1	
R291		ERD14VJ103	10K	1	
R292		ERD14VJ223	22K	1	
R293		ERD14VJ103	10K	1	
R294		ERD14VJ102	1K	1	
R295		ERD14VJ272	2.7K	1	
R296		ERD14VJ103	10K	1	
R297		ERD14VJ332	3.3K	1	
R298		ERD14VJ562	5.6K	1	
R299		ERD14VJ102	1K	1	
R2101		ERD14VJ332	3.3K	1	
R2102		ERD14VJ334	330K	1	
R2103		ERD14VJ473	47K	1	
R2104		ERD14VJ103	10K	1	

Ref. No.		Part No.	Part Name & Description	Pcs / Set	Remarks
R2105		ERD14VJ152	1.5K	1	
R2106		ERD14VJ103	10K	1	
R2107		ERD14VJ332	3.3K	1	
R2108		ERD14VJ103	10K	1	
R2109		ERD14VJ223	22K	1	
R2110		ERD14VJ102	1K	1	
R2111		ERD14VJ103	10K	1	
R2112, 2113		ERD14VJ221	220	2	
R2114		ERD14VJ103	10K	1	
R2115		ERD14VJ332	3.3K	1	
R2116		ERD14VJ560	56	1	
R2117-2119		ERD14VJ222	2.2K	3	
R2120		ERD14VJ331	330	1	
R2121		ERD14VJ103	10K	1	
R2122		ERD14VJ223	22K	1	
R2123		ERD14VJ103	10K	1	
R2124		ERD14VJ102	1K	1	
R2126		ERD14VJ153	15K	1	
R2127		ERD14VJ682	6.8K	1	
R2128		ERD14VJ562	5.6K	1	
R2129		ERD14VJ101	100	1	
R2130		ERD14VJ562	5.6K	1	
R2131		ERD14VJ223	22K	1	
R2132		ERD14VJ104	100K	1	
R2133		ERD14VJ562	5.6K	1	
R2134		ERD14VJ101	100	1	
R2135		EVNK4AA00B55	Variable 500K	1	
R2136		ERD14VJ223	22K	1	
			Capacitors		
C201		ECEA16V10L	Electrolytic 16V 10	1	
C202		ECQM05102KZB	Myler 50V 0.001	1	
C203		ECKC2H331KA3	Ceramic 10^5V 330P	1	

Ref. No.		Part No.	Part Name & Description	Pcs / Set	Remarks
C204		ECEA16V10L	Electrolytic 16V 10	1	
C205		ECEA50MR15	Aluminum Electrolytic 50V 0.15	1	
C206		ECEA16V10L	Electrolytic 16V 10	1	
C207		ECQM05683KZB	Myler 50V 0.068	1	
C208		ECEA50MR1	Aluminum Electrolytic 50V 0.1	1	
C209		ECQS1471JZ	Styrol 125V 470P	1	
C210		ECQM05104KZB	Myler 50V 0.1	1	
C211, 212		ECQM05103KZB	Myler 50V 0.01	2	
C213		ECQM05333KZV	Myler 50V 0.033	1	
C214		ECQM05272KZB	Myler 50V 0.0027	1	
C215		ECEA16V220L	Electrolytic 16V 220	1	
C216, 217		ECEA50V1L	Electrolytic 50V 1	2	
C218		ECQM05102KZB	Myler 50V 0.001	1	
C219		ECEA16V10L	Electrolytic 16V 10	1	
C220, 221		ECQM05393KZB	Myler 50V 0.039	2	
C222		ECEA25V4R7L	Electrolytic 25V 4.7	1	
C223		ECEA16V100L	Electrolytic 16V 100	1	
C224		ECQM05102KZB	Myler 50V 0.001	1	
C225		ECQM05473KZB	Myler 50V 0.047	1	
C226		ECQM05272KZB	Myler 50V 0.0027	1	
C227, 228		ECEA50MR68	Aluminum Electrolytic 50V 0.68	2	
C229		ECEA16V47L	Electrolytic 16V 47	1	
C230		ECQM05103KZB	Myler 50V 0.01	1	
C231		ECQM05333KZB	Myler 50V 0.033	1	
C232		ECEA50MR68	Aluminum Electrolytic 50V 0.68	1	
C233		ECEA16V100L	Electrolytic 16V 100	1	
C234		ECEA50MR33	Aluminum Electrolytic 50V 0.33	1	
C235		ECEA16V220L	Electrolytic 16V 220	1	
C236, 237		ECQM05103KZB	Myler 50V 0.01	2	
C238		ECQM05103KZB	Myler 50V 0.015	1	
C239-241		ECEA25V4R7L	Electrolytic 25V 4.7	3	
C242		EDQM05103KZB	Myler 50V 0.01	1	

Ref. No.		Part No.	Part Name & Description	Pcs / Set	Remarks
C243-245		ECEA16V47L	Electrolytic 16V 47	3	
C246-248		ECQM05103KZB	Myler 50V 0.01	3	
C249		ECEA50V1L	Electrolytic 50V 1	1	
C250, 251		ECEA16V47L	Electrolytic 16V 47	2	
C252		ECQM05102KZB	Myler 50V 0.001	1	
C255		ECQM05103KZB	Myler 50V 0.01	1	
C257		ECQM05102KZB	Myler 50V 0.001	1	
C258		ECCD1H221K	Ceramic 10^4V 220P	1	
C259, 260		ECEA16V47L	Electrolytic 16V 47	2	
C261		ECQM05473KZB	Myler 50V 0.047	1	
C259		ECQS1471JZ	Styrol 125V 470P	1	
			Coils		
L201		VLT12	High Frequency	1	
L202-204		VLQ7H102J	Inductance 1mH	3	
			Miscellaneous		
		VJH24	Check Terminal	19	
		VQL322C23	Assy No. Label	1	
		VSC0217	Shield Board	1	
		TEL302	GT Pin	32	
			AUDIO CIRCUIT BOARD ASSY		
			Transistors		
TR401, 402		2SC644		2	
TR403, 403		2SC828		2	
TR405		2SC1383		1	
TR406		2SA564		1	
TR407, 408		2SC828		2	
TR409		2SC1317		1	
TR410		2SA564		1	
TR411, 413		2SC1317		3	
TR414, 415		2SC1383		2	

Ref. No.		Part No.	Part Name & Description	Pcs / Set	Remarks
TR413		2SD389-P		1	
			Diodes		
D401		MA150LF	Si High Speed Switching	1	
D402-404		OA90	Ge	3	
D405		10D1		1	
D406-412		MA150LF	Si High Speed Switching	7	
D413-415		10D1		3	
			Resistors		
R401		ERD14VJ224	220K	1	
R402		ERD14VJ104	100K	1	
R403		ERD14VJ182	1.8K	1	
R404		ERD14VJ183	18K	1	
R405		ERD14VJ103	10K	1	
R406		ERD14VJ471	470	1	
R407		ERD14VJ103	10K	1	
R408		EVNK4AA00B14	Variable 10K	1	
R409		ERD14VJ154	150K	1	
R410		ERD14VJ473	47K	1	
R411		ERD14VJ101	100	1	
R412		ERD14VJ682	6.8K	1	
R413		ERD14VJ100	10	1	
R414		ERD14VJ122	1.2K	1	
R415		ERD14VJ562	5.6K	1	
R416		ERD14VJ123	12K	1	
R417		ERD14VJ182	1.8K	1	
R418		ERD14VJ222	2.2K	1	
R419		ERD14VJ154	150K	1	
R420		ERD14VJ273	27K	1	
R421		ERD14VJ182	1.8K	1	
R422		ERD14VJ222	2.2K	1	
R423		ERD14VJ101	100	1	
R424		ERD14VJ471	470	1	

Ref. No.		Part No.	Part Name & Description			Pcs / Set	Remarks
R425		ERD14VJ103			10K	1	
R426		ERD14VJ563			56K	1	
R427		ERD14VJ104			100K	1	
R428		ERD14VJ273			27K	1	
R429		ERD14VJ331			330	1	
R430		ERD14VJ102			1K	1	
R431		ERD14VJ392			3.9K	1	
R432		ERD14VJ104			100K	1	
R433		ERD14VJ822			8.2K	1	
R434		ERD14VJ103			10K	1	
R435		ERD14VJ102			1K	1	
R436		ERD14VJ681			680	1	
R437		ERD14VJ562			5.6K	1	
R438		ERD14VJ273			27K	1	
R439		ERD14VJ473			47K	1	
R440		ERD14VJ221			220	1	
R441		ERD14VJ222			2.2K	1	
R442		EVNK4AA00B53	Variable		5K	1	
R443		ERD14VJ392			3.9K	1	
R444		ERD14VJ102			1K	1	
R445		ERD14VJ392			3.9K	1	
R446		ERD14VJ103			10K	1	
R447, 338		ERD14VJ273			27K	2	
R449		ERD14VJ681			680	1	
R450, 451		ERD14VJ392			3.9K	2	
R452		ERD14VJ273			27K	1	
R453, 454		ERD14VJ392			3.9K	2	
R455		ERD12TJ471		1/2W	470	1	
R456		ERD14VJ103			10K	1	
R457		ERD14VJ101			100	1	
R458		ERD14VJ102			1K	1	
R459		ERD14VJ5R6			5.6	1	

Ref. No.		Part No.	Part Name & Description			Pcs / Set	Remarks
R460		ERD14VJ392			3.9K	1	
R461		ERD14VJ100			10	1	
			Capacitors				
C401		ECEA25V4R7L	Electrolytic	25V	4.7	1	
C402		ECEA16V47L	Electrolytic	16V	47	1	
C403		ECCC1H270KC3	Ceramic	10^4V	27P	1	
C404		ECEA16V10L	Electrolytic	16V	10	1	
C405		ECEA6V100L	Electrolytic	6V	100	1	
C406		ECEA16V10L	Electrolytic	16V	10	1	
C407		ECCC2H560KC3	Ceramic	10^5V	56P	1	
C408		ECEA16V47L	Electrolytic	16V	47	1	
C409		ECQM05392KZB	Myler	50V	0.0039	1	
C410		ECEA16V47L	Electrolytic	16V	47	1	
C411		ECQM05273KZB	Myler	50V	0.027	1	
C412		ECEA16V47L	Electrolytic	16V	47	1	
C413		ECEA16V10L	Electrolytic	16V	10	1	
C414		ECEA16V220L	Electrolytic	16V	220	1	
C415		ECEA50V1L	Electrolytic	50V	1	1	
C416		ECEA16N4R7	Non-polarity Electrolytic	16V	4.7	1	
C417		ECQM05272KZB	Myler	50V	0.0027	1	
C418		ECEA16V10L	Electrolytic	16V	10	1	
C419		ECEA16N4R7	Non-polarity Electrolytic	16V	4.7	1	
C420		ECQM05472KZB	Myler	50V	0.0047	1	
C421		ECEA50MR22	Aluminum Electrolytic	50V	0.22	1	
C422		ECEA16N4R7	Non-polarity Electrolytic	16V	4.7	1	
C432		ECEA16V10L	Electrolytic	16V	10	1	
C424		ECEA25V4R7L	Electrolytic	25V	4.7	1	
C425		ECEA16V47L	Electrolytic	16V	47	1	
C426		ECEA16V10L	Electrolytic	16V	10	1	
C427		ECEA25V4R7L	Electrolytic	25V	4.7	1	
C428, 429		ECEA16V10L	Electrolytic	16V	10	2	
C430		ECEA16N4R7	Non-polarity Electrolytic	16V	4.7	1	

Ref. No.		Part No.	Part Name & Description	Pcs / Set	Remarks
C431		ECEA16V10L	Electrolytic 16V 10	1	
C432-434		ECKC1H103PF3	Ceramic 10^4V 0.01	3	
C435		ECEA16V10L	Electrolytic 16V 10	1	
C436		ECQM05333KZB	Myler 50V 0.033	1	
C437		ECQM2153KZB	Myler 0.015	1	
C438		ECKC2H561KB4	Ceramic 10^5V 56P	1	
C439		ECV1ZW50X44	Trimmer 1W 1-50pF	1	
C440		ECCC2H560KC3	Ceramic 10^5V 56P	1	
C441		ECQM05392KZB	Myler 50V 0.0039	1	
C442		ECQM05102KZB	Myler 50V 0.001	1	
			Coils		
L401		ELT10S904	High-Frequency	1	
L402		VLQ24F102K25	Ferry Inductance	1	
L403		VLQ12S181K	Dummy	1	
			Transformers		
T401		QLA320	Earphone	1	
T402		VLT0038	Oscillation	1	
			Relays		
K401		VSY415		1	
L402		VSY1044		1	
			Miscellaneous		
		TEL302	GT Pin	30	
		VJH24	Check Terminal	5	
		VQL328E2	Assy No. Label	1	
			TIMING CIRCUIT BOARD ASSY		
			Transistors		
TR6601-6603		2SC828		3	
TR6604		2SC1317		1	
TR6505		2SC828		1	
TR6606, 6607		2SC1317		2	
TR6608		2SC1383		1	
TR6609-6624		2SC828		16	
TR6625, 6626		2SC1317		2	
TR6627		2SC1383		1	
TR6628		2SA684		1	
			Diodes		
D6601-6611		MA150LF	Si	11	
D6612		OA90	Ge	1	
D6613-6617		MA150LF	Si	5	
D6618		OA90	Ge	1	
D6619, 6620		MA150LF	Si	2	
			Resistors		
R6601		ERD14VJ332	3.3K	1	
R6602		ERD14VJ822	8.2K	1	
R6603		ERD14VJ102	1K	1	
R6604-6607		ERD14VJ103	10K	4	
R6608		ERD14VJ102	1K	1	
R6609		ERD14VJ221	220	1	
R6610		ERD14VJ223	22K	1	
R6611		ERD14VJ332	3.3K	1	
R6612		ERD14VJ182	1.8K	1	
R6613		ERD14VJ682	6.8K	1	
R6614		ERD12TJ221	1/2W 220	1	
R6615		ERD14VJ394	390K	1	
R6616		ERD14VJ332	3.3K	1	
R6617		ERD14VJ182	1.8K	1	
R6618		ERD14VJ123	12K	1	
R6619		ERD14VJ562	5.6K	1	
R6620		ERD14VJ182	1.8K	1	
R6621		ERD14VJ682	6.8K	1	
R6622		ERG2ANJ271	Metal Oxide 2W 270	1	
R6623		ERD14VJ102	1K	1	

Ref. No.		Part No.	Part Name & Description	Pcs / Set	Remarks
R6624		ERD14VJ223	22K	1	
R6625		ERD14VJ682	6.8K	1	
R6626		ERD14VJ102	1K	1	
R6627		ERD14VJ221	220	1	
R6628		ERD14VJ103	10K	1	
R6629		ERD14VJ102	1K	1	
T6630, 6631		ERD14VJ103	10K	2	
R6632		ERD14VJ563	56K	1	
R6633		ERD14VJ332	3.3K	1	
R6634, 6635		ERD14VJ103	1K	2	
R6636		ERD14VJ221	220	1	
R6637-6639		ERD14VJ103	10K	3	
R6640		ERD14VJ332	3.3K	1	
R6641		ERD14VJ333	33K	1	
R6642		ERD14VJ103	10K	1	
R6643, 6644		ERD14VJ333	33K	2	
R6645		ERD14VJ103	10K	1	
R6646		ERD14VJ333	33K	1	
R6647		ERD14VJ332	3.3K	1	
R6648		ERD14VJ223	22K	1	
R6649		ERD14VJ103	10K	1	
R6650		ERD14VJ332	3.3K	1	
R6651, 6652		ERD14VJ103	10K	2	
R6653		ERD14VJ332	3.3K	1	
T6654		ERD14VJ103	10K	1	
R6655		ERD14VJ823	82K	1	
R6656, 6657		ERD14VJ333	33K	2	
R6658		ERD14VJ332	3.3K	1	
R6659		ERD14VJ333	33K	1	
R6660		ERD14VJ332	3.3K	1	
R6661		ERD14VJ221	220	1	
R6662		ERD14VJ332	3.3K	1	

Ref. No.		Part No.	Part Name & Description	Pcs / Set	Remarks
R6663		ERD14VJ681	680	1	
R6664		EVNK4AA00B53	Variable 5K	1	
R6665		ERD14VJ103	10K	1	
R6666		EVNK4AA00B25	Variable 200K	1	
R6667		ERD14VJ184	180K	1	
R6668, 6668		ERD14VJ333	33K	2	
R6670		ERD14VJ103	10K	1	
R6671		ERD14VJ223	22K	1	
R6672		ERD14VJ273	27K	1	
R6673		ERD14VJ223	22K	1	
R6674		ERD14VJ273	27K	1	
R6675		ERD14VJ822	8.2K	1	
R6676		ERD14VJ272	2.7K	1	
R6677, 6678		ERD14VJ103	10K	2	
R6679		ERD14VJ471	470	1	
R6680		ERD14VJ681	680	1	
R6681		ERD14VJ823	82K	1	
R6682		ERD14VJ102	1K	1	
R6683		ERD14VJ221	220	1	
R6684		ERD14VJ560	56	1	
R6685		ERD14VJ681	680	1	
R6686		ERD14VJ823	82K	1	
R6687		ERD14VJ681	680	1	
R6688, 6689		ERD14VJ5R6	5.6	2	
R6691		ERD14VJ332	3.3K	1	
R6692		ERD14VJ682	6.8K	1	
R6693		ERD14VJ152	1.5K	1	
R6694		ERD14VJ101	100	1	
			Capacitors		
C6601		ECKC1H103PF3	Ceramic 10^4V 0.01	1	
C6602		ECEA50MR33	Electrolytic 50V 0.33	1	
C6604		ECEA50MR33	Electrolytic 50V 0.33	1	

Ref. No.		Part No.	Part Name & Description	Pcs / Set	Remarks
C6605		ECEA16V47L	Electrolytic 16V 47	1	
C6606		ECEA6V47L	Electrolytic 6V 47	1	
C6607		ECEA50MR68	Electrolytic 50V 0.68	1	
C6608		ECEA25V4R7L	Electrolytic 25V 4.7	1	
C6609		ECEA25V47L	Electrolytic 25V 47	1	
C6610, 6611		ECKC1H103PF3	Ceramic 10^4V 0.01	2	
C6612		ECEA16V47L	Electrolytic 16V 47	1	
C6613, 6614		ECKC1H103PF3	Ceramic 10^4V 0.01	2	
C6615		ECEA16V10L	Electrolytic 16V 10	1	
C6616		ECKC1H103PF3	Cermic 10^4V 0.01	1	
C6617		ECEA50MR47	Aluminum Electrolytic 50V 0.47	1	
C6618		ECEA25V4R7L	Electrolytic 25V 4.7	1	
C6619-6622		ECKC1H103PF3	Ceramic 10^4V 0.01	4	
C6623		ECEA25V4R7L	Electrolytic 25V 4.7	1	
C6624		ECQM05683KZB	Myler 50V 0.068	1	
C6625		ECKC1H103PF3	Ceramic 10^4V 0.01	1	
C6626		ECKC1H102KB4	Ceramic 10^4V 0.001	1	
C6627		ECCC1H680KC3	Ceramic 10^4V 68P	1	
C6628-6632		ECKC1H103PF	Ceramic 10^4V 0.01	5	
C6633		ECEA50V1L	Electrolytic 50V 1	1	
C6634		ECQS1271KZ	Styrol 125V 270P	1	
			Coils		
L6601		VLQ80F102K	1mH	1	
L6602-6604		VLQ80F221K	220μH	3	
L6605		VLQ80F150K	15μH	1	
L6606		VLQ80F221K	220μH	1	
			Miscellaneous		
		VJH54	Check Terminal	7	
		VMP177	Holder, Circuit Board	1	
		VQL322G32	Assy No. Label	1	
		VSC0228	Shield Case	1	
		XTV3+8BFX	Screw	1	

Ref. No.		Part No.	Part Name & Description	Pcs / Set	Remarks
			RECORDING CONTROL CIRCUIT BOARD ASSY		
			Transistors		
TR6201		2SC828		1	
TR6202, 6203		2SC1317		2	
TR6204		2SC1383		1	
TR6205		2SC828		1	
TR6206, 6207		2SC1317		2	
TR6208		2SC1383		1	
TR6209		2SC1317		1	
TR6210		2SC1383		1	
TR6211		2SC828		1	
TR6212		2SC1317		1	
TR6213		2SC828		1	
TR6214		2SC1383		1	
TR6215		2SC828		1	
TR6216		2SC1317		1	
TR6217		2SC1383		1	
			Diodes		
D6201-6228		MA150LF	Si High Speed Switching	28	
			Resistors		
R6201		ERD14VJ562	5.6K	1	
R6202		ERD14VJ822	8.2K	1	
R6203		ERD14VJ562	5.6K	1	
R6204		ERD14VJ102	1K	1	
R6205		ERD14VJ271	270	1	
R6206, 6207		ERD14VJ332	3.3K	2	
R6208, 6209		ERD14VJ102	1K	2	
R6210		ERD14VJ103	10K	1	
R6211		ERD14VJ392	3.9K	1	
R6212		ERG2ANJ102	Metal Oxide 1K	1	
R6213		ERD14VJ562	5.6K	1	
R6214		ERD14VJ223	22K	1	

Ref. No.		Part No.	Part Name & Description	Pcs / Set	Remarks
R6215		ERD14VJ562	5.6K	1	
R6216		ERD14VJ102	1K	1	
R6217		ERD14VJ271	270	1	
R6218, 6219		ERD14VJ332	3.3K	2	
R6220		ERD14VJ102	1K	1	
R6221		ERD14VJ392	3.9K	1	
R6222		ERD14VJ102	1K	1	
R6223		ERD14VJ103	10K	1	
R6224		ERG2ANJ271	Metal Oxide 270	1	
R6225		ERD14VJ222	2.2K	1	
R6226		ERD14VJ103	10K	1	
R6227		ERD14VJ392	3.9K	1	
R6228		ERG2ANJ271	Metal Oxide 270	1	
R6229		ERD14VJ822	8.2K	1	
T6230		ERD14VJ682	6.8K	1	
R6231		ERD12TJ152	1/2W 1.5K	1	
R6232, 6233		ERD14VJ223	22K	2	
R6234		ERD14VJ102	1K	1	
R6235		ERD14VJ271	270	1	
R6236-6239		ERD14VJ332	3.3K	4	
R6240		ERD14VJ102	1K	1	
R6241		ERD14VJ562	5.6K	1	
R6242		ERD14VJ682	6.8K	1	
R6243		ERG1ANJ271	Metal Oxide 270	1	
			Capacitors		
C6201-6203		ECEA16V10L	Electrolytic 16V 10	3	
			Miscellaneous		
		VQL322A19	Ass'y No. Label	1	

Ref. No.		Part No.	Part Name & Description	Pcs / Set	Remarks
			TRANSPORT CONTROL CIRCUIT BOARD ASSY		
			IC		
IC601		AN605	5-Schmidt Trigger, 1DC Amp.	1	
			Transistors		
TR603-605		2SC828		3	
TR606		2SC1317		1	
TR607, 608		2SC828		2	
TR609		2SC1317		1	
TR610		2SC828		1	
TR611		2SC1317		1	
TR612-614		2SC828		3	
TR615		2SC1317		1	
TR616		2SC828		1	
TR617		2SC1317		1	
TR618		2SC828		1	
TR619		2SC1317		1	
TR620		2SC828		1	
TR621-623		2SC1317		3	
TR624		2SC828		1	
TR625-627		2SC1317		3	
TR628, 630		2SC828		2	
TR631, 632		2SC1317		2	
			Diodes		
D604-645		AM150	Si	39	
D646		RD6A	Zener	1	
D650-662		MA150	Si	13	
			Resistors		
R601		ERD14VJ270	27	1	
R608		ERD14VJ102	1K	1	
R609		ERD14VJ103	10K	1	
R610, 611		ERD14VJ332	3.3K	2	
R612, 613		ERD14VJ103	10K	2	

Ref. No.		Part No.	Part Name & Description	Pcs / Set	Remarks
R614		ERD14VJ562	5.6K	1	
R615, 616		ERD14VJ103	10K	2	
R618		ERD14VJ274	270K	1	
R619-623		ERD14VJ102	1K	5	
R624		ERD14VJ330	33	1	
R625		ERD14VJ562	5.6K	1	
R626, 627		ERD14VJ103	10K	2	
R628		ERD14VJ562	5.6K	1	
R629		ERD14VJ273	27K	1	
R630		ERD14VJ103	10K	1	
R631		ERD14VJ332	3.3K	1	
R632, 633		ERD14VJ103	10K	1	
R634		ERD14VJ154	150K	1	
R635		ERD14VJ104	100K	1	
R636		ERD14VJ334	330K	1	
R637		ERD14VJ104	100K	1	
R638		ERD14VJ563	56K	1	
R639		ERD14VJ104	100K	1	
R640, 641		ERD14VJ222	2.2K	2	
R642		ERD14VJ333	33K	1	
R643		ERD14VJ223	22K	1	
R644-647		ERD14VJ562	5.6K	4	
R648-650		ERD14VJ103	10K	3	
R651		ERD14VJ562	5.6K	1	
R652		ERD14VJ103	10K	1	
R654		ERD14VJ332	3.3K	1	
R655		ERD14VJ153	15K	1	
R656		ERD14VJ562	5.6K	1	
R657		ERD14VJ102	1K	1	
R658, 659		ERD14VJ152	1.5K	2	

Ref. No.		Part No.	Part Name & Description	Pcs / Set	Remarks
R660		ERD14VJ270	27	1	
R661-665		ERD14VJ102	1K	5	
R666		ERD14VJ103	10K	1	
R667		ERD14VJ562	5.6K	1	
R668		ERD14VJ332	3.3K	1	
R669		ERD14VJ153	15K	1	
R670		ERD14VJ562	5.6K	1	
R671		ERD14VJ102	1K	1	
R672		ERD14VJ152	1.5K	1	
R673		ERD14VJ270	27	1	
R674, 675		ERD14VJ152	1.5K	2	
R676		ERD14VJ102	1K	1	
R677		ERD14VJ152	1.5K	1	
R678-680		ERD14VJ103	10K	3	
R681		ERD14VJ332	3.3K	1	
R682		ERD14VJ153	15K	1	
R683		ERD14VJ562	5.6K	1	
R684		ERD14VJ102	1K	1	
R685		ERD14VJ152	1.5K	1	
R686		ERD14VJ270	27	1	
R687, 688		ERD14VJ152	1.5K	2	
R689		ERD14VJ681	680	1	
R690		ERD14VJ152	1.5K	1	
R691		ERD14VJ103	10K	1	
R692		ERD14VJ102	1K	1	
R693		ERD14VJ104	100K	1	
R697		ERD14VJ102	1K	1	
R698		ERD14VJ103	10K	1	
R699		ERD14VJ562	5.6K	1	
R6100		ERD14VJ102	1K	1	
R6101		ERD14VJ271	270	1	
R6102		ERD14VJ152	1.5K	1	

Ref. No.	Part No.	Part Name & Description	Pcs / Set	Remarks
R6103	ERD14VJ681	680	1	
R6104	ERD14VJ332	3.3K	1	
R6105	ERD14VJ562	5.6K	1	
R6108	ERD14VJ222	2.2K	1	
R6109	ERD14VJ103	10K	1	
R6110	ERD14VJ102	1K	1	
R6111	ERD14VJ562	5.6K	1	
R6112	EVNK4AA00B55	Variable 500K	1	
R6115	ERD14VJ270	27	1	
R6116	ERD14VJ102	1K	1	
		Capacitors		
C601	ECEA16V33T	Electrolytic 16V 33	1	
C602	ECEA16V10L	Electrolytic 16V 10	1	
C603, 604	ECEA16V33T	Electrolytic 16V 33	2	
C605	ECQM05333KZ	Myler 50V 0.033	1	
C606	ECEA16V10L	Electrolytic 16V 10	1	
C607	ECQM05333KZ	Myler 50V 0.033	1	
C608-613	ECEA16V10L	Electrolytic 16V 10	5	
C614	ECQM05333KZ	Myler 50V 0.033	1	
C615, 617	ECEA16V33T	Electrolytic 16V 33	2	
C618	ECEA16N47	Non-Polarity Electrolytic 16V 47	1	
C619	ECQM05332KZB	Myler 50V 0.0033	1	
C620	ECEA16N4R7	Non-polarity Electrolytic 16V 4.7	1	
		Miscellaneous		
	VQL322G33	Ass'y No. Label	1	
		SUB-TRANSPORT CONTROL CIRCUIT BOARD ASSY		
		Transistors		
TR6301-6306	2SC828		6	
TR6307	2SC828A		1	
TR6308	2SC1226A		1	

Ref. No.	Part No.	Part Name & Description	Pcs / Set	Remarks
TR6309	2SC1318		1	
TR6310-6315	2SC828		6	
		Diodes		
D6301-6311	AM150	Si High Speed Switching	11	
		Resistors		
R6301	ERD14VJ103	10K	1	
R6302	ERD14VJ332	3.3K	1	
R6303	ERD14VJ104	100K	1	
R6304	ERD14VJ332	3.3K	1	
R6305	ERD14VJ223	22K	1	
R6306	ERD14VJ221	220	1	
R6307	ERD14VJ332	3.3K	1	
R6308	ERD14VJ223	22K	1	
R6309	ERD14VJ332	3.3K	1	
R6310	ERD14VJ223	22K	1	
R6311	ERD14VJ103	10K	1	
R6312	ERD14VJ223	22K	1	
R6313-6317	ERD14VJ103	10K	5	
R6318-6321	ERD14VJ223	22K	4	
R6322	ERG2ANJ101	Metal Oxide 2W 100	1	
R6323	ERD14VJ332	3.3K	1	
R6324	ERD14VJ223	22K	1	
R6325	ERD14VJ103	10K	1	
R6326	ERD14VJ101	100	1	
R6327	ERD14VJ332	3.3K	1	
R6328	ERD14VJ223	22K	1	
R6329, 6330	ERD14VJ332	3.3K	2	
R6331, 6332	ERD14VJ102	1K	2	
R6333, 6334	ERD14VJ103	10K	2	
R6335	ERD14VJ222	2.2K	1	
R6336	ERD14VJ223	22K	1	
R6337	ERD14VJ221	220	1	

Ref. No.		Part No.	Part Name & Description	Pcs / Set	Remarks
R6338		ERD14VJ223	22K	1	
R6339		ERD14VJ222	2.2K	1	
R6340		ERD14VJ103	10K	1	
R6342		ERD14VJ103	10K	1	
R6343, 6344		ERD14VJ222	2.2K	2	
			Capacitors		
C6301		ECEA16V10L	Electrolytic 16V 10	1	
C6302		ECEA16V33T	Electrolytic 16V 33	1	
C6303		ECEA16V10L	Electrolytic 16V 10	1	
C6304		ECEA16N10	Non-Polarity Electrolytic 16V 10	1	
C6305, 6306		ECEA16V10L	Electrolytic 16V 10	2	
C6307		ECEA16V47L	Electrolytic 16V 47	1	
C6308		ECEA25V47L	Electrolytic 25V 47	1	
C6309		ECEA16V10L	Electrolytic 16V 10	1	
C6310		ECEA50V1L	Electrolytic 50V 1	1	
C6320		ECQM05223KZ	Myler 50V 0.022	1	
			Miscellaneous		
		VJP57	4 Pin Connector	1	
		VJP58	6 Pin Connector	2	
		VMA1574	Angle, Circuit Board	1	
		VQL322G20	Ass'y No. Label	1	
		XYN3+F6FXS	Screw	2	
			SOLENOID DRIVE CIRCUIT BOARD ASSY		
			Diodes		
D150-153		10D1		4	
D154, 155		10D10		2	
D156		MS4		1	
			Resistors		
R150		ERX2ANJ2R2	Metal 2.2	1	
R151		ERD12TJ563	1/2W 56K	1	

Ref. No.		Part No.	Part Name & Description	Pcs / Set	Remarks
			Capacitors		
C150		ECKC2H472PE	Ceramic 10^5V 0.0047	1	
C154		ECEB160V220Y	Electrolytic 160V 220	1	
			Miscellaneous		
K150-153		VSY104U	Relay	4	
P6502		VJP5021A	6 Pin Plug	1	
		VJP59	GT Pin	2	
		VJP5023	Pin	6	
		VMA1222	Angle, Circuit Board	1	
		VQL322A7	Ass'y No. Label	1	
		XTV3+6BFX	Screw	1	
			LINE FILTER ASSY		
			Capacitors		
C6507, 6508		ECNC4A473M	Oil 450V 0.047	2	
			Resistors		
R6520		ERD12TJ101	1/2W 100	1	
			Coil		
L6504		VTQ2	Line Filter	1	
			Miscellaneous		
		VJH23	Check Terminal	6	
		VMA1591	Bracket	1	
		XTV3+6FX	Screw	2	
		VQL322A10	Ass'y No. Label	1	
			LAMP CIRCUIT BOARD ASSY		
PL6502-6506		XAMQ27P20W	Pilot Lamp	5	
R6518		ERD14TJ101	100	1	
			Miscellaneous		
		VMA1228	Push Botton Lamp Holder	1	

Ref. No.		Part No.	Part Name & Description		Pcs / Set	Remarks
		XTN3+6BFX	Screw		2	
			OPERATION BOARD ASSY			
			Transistor			
TR6505		2SA564	Transistor		1	
			Diodes			
D6508, 6514		10E1			7	
		LN21	Light Emitting Diode (LED)		1	
			Resistors			
R6521		ERD12TJ391	1/2W	390	1	
R6525		ERD14TJ123		12K	1	
R6522		ERD14TJ101		100	1	
R6524		EVCB0AK25A14	Variable	10K	1	
		EVR29AK25B32	Variable	300	1	
		EVZC40K25B32	Variable	300	1	
			Miscellaneous			
		QSL0062	Meter		2	
		VSE5A	Tracking Meter		1	
			Selector Switch Circuit Board		1	
		VMA2470	Angle		1	
		VMA2489	Lamp Holder		1	
		VMF53	Cushion, Meter		1	
		VMF0122				
		VMG5025	Lamp Cover		2	
		VSP0063	Push Switch		1	
		VST0008	Lever Switch		1	
		VST0009	Lever Switch		1	
		XAMR10P100	Lamp		2	
		XYN26+C4FXS	Screw		4	
		XTV3+6BFX	Screw		1	

Ref. No.		Part No.	Part Name & Description		Pcs / Set	Remarks
			JACK BOARD ASSY			
			Resistors			
R6501		ERD14TJ182		1.8K	1	
R6502		ERD14TJ224		220K	1	
R6506, 6507		ERD14TJ750		75	2	
R6514		EVCB0HK15B53	Variable	5K	1	
R6515		ERD14TJ222		2.2K	1	
			Miscellaneous			
		VJH8	Lug Board		2	
		VJJ7	RCA Pin Jack		1	
		VJJ11	Mic Jack		1	
		VJR1L2PSUB	Lug Terminal		1	
		VJS1	8 Pin Socket		1	
		VJS1003	Coaxial Connector		3	
		VMA1581	Jack Board		1	
		VMZ0126	Jack Terminal		1	
		VQL329L	Ass'y No. Label		1	
		XWG3EFX	Washer		2	
		XWS84W	Washer		2	
			WIRING ASSY			
P01, 03		VJS5022	15 Pin Socket		2	
P05		VJP0087	15 Pin Connector		1	
P06		TJT488A	3 Pin Socket		1	
P15-18		VJS67	6 Pin Socket		4	
P19		TJT488A	3 Pin Socket		1	
P21		VJP0087	15 Pin Connector		1	
P22, 23		TJT581A	6 Pin Socket		2	
P24, 25		VJP0087	15 Pin Connecator		2	
P28		VJS70	22 Pin Connecator		1	
P41-43		TJT581A	6 Pin Socket		3	

Ref. No.		Part No.	Part Name & Description	Pcs / Set	Remarks
P44		VJP0087	15 Pin Connector	1	
P45		TJT581A	6 Pin Socket	1	
P46, 47		VJS67	6 Pin Socket	2	
P47-50		VJS5022	15 Pin Socket	2	
P02		VJS5026A	6 Pin Socket	1	
J27		VJS71	28 Pin Connector	1	
J45		VJS76	34 Pin Connector	1	
		VJS1016	15 Pin Connector	1	
		VJS1018	Connector	13	
		VJS68	Socket	30	
		VJS72	Socket	60	
		VJS5020	Socket	1	
		VJS5028	Socket	56	
		VJH55	Check Terminal	18	
		VMA1575	Remote Control	1	
		VSS9	Slide Switch	1	
		ERD452B	Slide Switch	1	
			LUG TERMINAL ASSY		
			Transistors		
		2SC828		2	
			Resistors		
		ERD14TJ332	3.3K	2	
		ERD14TJ103	10K	2	
			Capacitors		
		ECKD1H103PF3	Ceramic 50V 0.01	2	
			Miscellaneous		
		VJR1L6PLUB	Lug Terminal	1	

Ref. No.		Part No.	Part Name & Description	Pcs / Set	Remarks
			LUG TERMINAL ASSY		
			Transistor		
		2SC828		1	
			Resistors		
		ERD14TJ103	10K	2	
			Capacitors		
		ECEA25V20L	Electrolytic 25V 10	1	
			Miscellaneous		
		VJR1L6PLUB	Lug Terminal	1	
			15 PIN CONNECTOR (A) ASSY		
P6550		VJP5018A	15 Pin Plug	1	
		VJP5016	Pin	13	
			15 PIN CONNECTOR (B) ASSY		
P6549		VJP5018A	15 Pin Plug	1	
		VJP5016	Pin	15	
			15 PIN CONNECTOR (C) ASSY		
		VJP5018A	15 Pin Plug	1	
		VJP5016	Pin	13	
			CONNECTOR (1) ASSY		
		VJS69	10 Pin Connector	1	
		VJS70	22 Pin Connector	3	
		QJT0015	Lug Terminal	5	

Ref. No.		Part No.	Part Name & Description	Pcs / Set	Remarks
			DC MOTOR CIRCUIT BOARD ASSY		
			Transistors		
TR1-3		2SD389	Si NPN High Power Amp	3	
TR4-8		2SA564	Si PNP Low Power Amp	5	
			Diodes		
D1-3		OA91	High Breakdown Voltage	3	
D4-7		AM26	Temp/Voltage Compensation	4	
D8		RD5.6EC	Zener	1	
			Resistors		
R1-3		ERD14VJ152	1.5K	3	
R4-6		ERD14VJ151	150	3	
R7		ERD14VJ471	470	1	
R8		ERD14VJ103	10K	1	
R9		ERD14VJ822	8.2K	1	
R10		ERD14VJ124	120K	1	
R11		ERD14VJ104	100K	1	
R12		ERD14VJ181	180	1	
R13		ERD14VJ682	6.8K	1	
R14		ERD14VJ331	330	1	
R15, 16		ERD14VJ472	4.7K	2	
R17, 18		ERD14VJ821	820	2	
R19		ERD14VJ562	5.6K	1	
R20		EVNK4AA00B52	Variable Resistor 500	1	
R21		ERD14VJ561	560	1	
R22		ERD14VJ822	8.2K	1	
R23		ERD14VJ333	33K	1	
R24		ERD14VJ393	39K	1	
R25		ERD14VJ331	330	1	
			Capacitors		
C1-3		ECEA50V1N	Aluminum Electrolytic 50V 1	3	
C4-6		ECEA25V3R3N	Aluminum Electrolytic 25V 3.3	3	
C7		ECQM05222KZ	Myler 50V 0.0022	1	
C8		ECQM05393KZ	Myler 50V 0.039	1	
C9		ECEA25V4R7N	Aluminum Electrolytic 25V 4.7	1	
C10		ECEA50V1N	Aluminum Electrolytic 50V 1	1	
C11, 12		ECEA25N4R7	Non-Polarity Electrolytic 25V 4.7	2	
C13		ECEA50N1	Non-Polarity Electrolytic 50V 1	1	
C14		ECEA25NR68	Non-Polarity Electrolytic 25V 0.68	1	
			Transformer		
T1		ELM10S153	Oscillation		

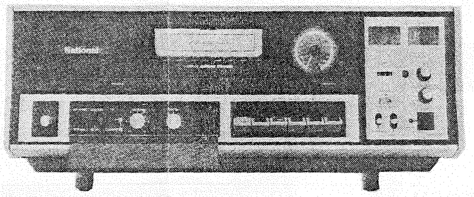
Editing Video Cartridge Recorder

NV-5130A -E -B -A -EF

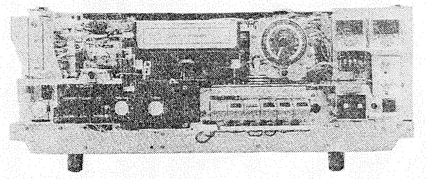
BLOCK DIAGRAM
SCHEMATIC DIAGRAM
CIRCUIT BOARD DIAGRAM

Power Supply Circuit (VEP0153A) 8-2
Head & Recording Amp Circuit (VEP0525B) 8-3
Video Recording Circuit (VEP0832D for NV-5130A-E/-B, VEP0832F for NV-5130A-A) 8-4
(VEP0832E for NV-A-EF) 8-6
Video Playback Circuit (VEP0335B for NV-5130A-EF) 8-8
(VEP0335A for NV-5130A-E/-B, VEP0335C for NV-5130A-A) 8-10
Colour Playback Circuit (VEP0831E for NV-5130A-E/-B/-A) 8-12
(VEP0831D for NV-5130A-EF) 8-14
Audio Circuit (VEP0428A) 8-16
Servo Control Circuit (VEP0254C) 8-18
Transport Control Circuit (VEP0630E) 8-20
Solenoid Drive Circuit (VEP0047A) 8-21
Sub-Transport Control, Circuit (VEP0634A) 8-22
Recording Control Circuit (VEP00146A) 8-23
Timing Circuit (VEP0658A) 8-24
Meter & Relay Circuit (VEP00145A) 8-26
DC Motor Drive Circuit (MGL12) 8-27
Lamp Terminal Circuit (VJB0022A) 8-28
Line Filter Circuit (VEP0049A) 8-28
Mode Selector SW Circuit (VJB00147) 8-28
Internal Connection Diagram 8-29

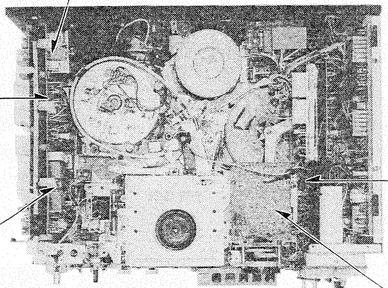
NV-5130A-E -B -A -EF CIRCUIT BOARD LAYOUT



FRONT VIEW



TOP VIEW



Head Amp. Circuit (VEP0525B)

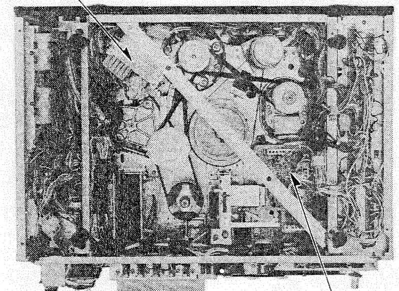
Timing Circuit
(VEP0658A)

Meter Circuit
(VEP00145A)

Video Playback Circuit
(VEP0335A……E, B)
(VEP0335B……EF)
(VEP0335C……A)

Power Supply Circuit
(VEP0153A)

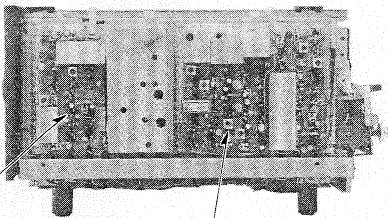
BOTTOM VIEW



Solenoid Drive Circuit (VEP0047A)

Rec. Control Circuit (VEP00146A)

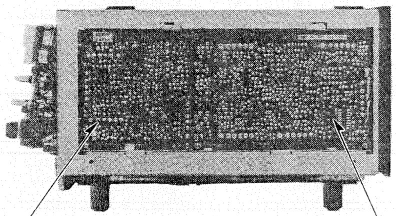
LEFT SIDE VIEW



Video Rec. Circuit
(VEP0832D……E, B)
(VEP0832E……EF)
(VEP0832F……A)

Colour Playback Circuit
(VEP0831E……E, B, A)
(VEP0831D……EF)

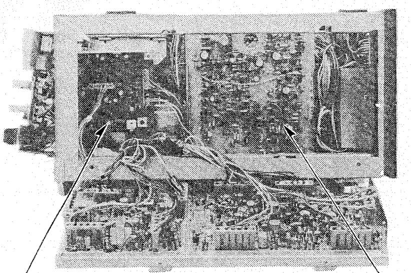
RIGHT SIDE VIEW I



Audio Circuit (VEP0428A)

Servo Control Circuit (VEP0254C)

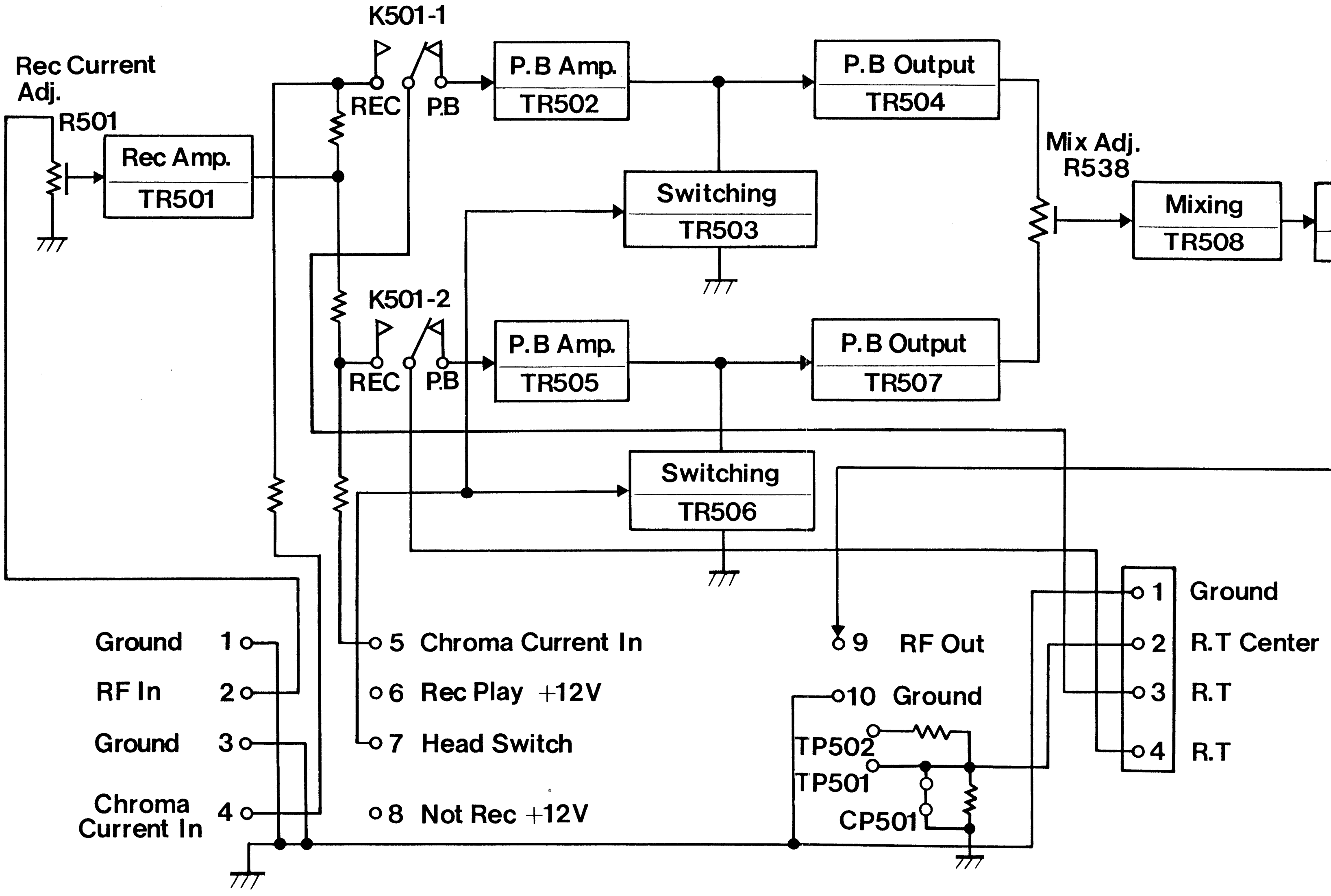
RIGHT SIDE VIEW II



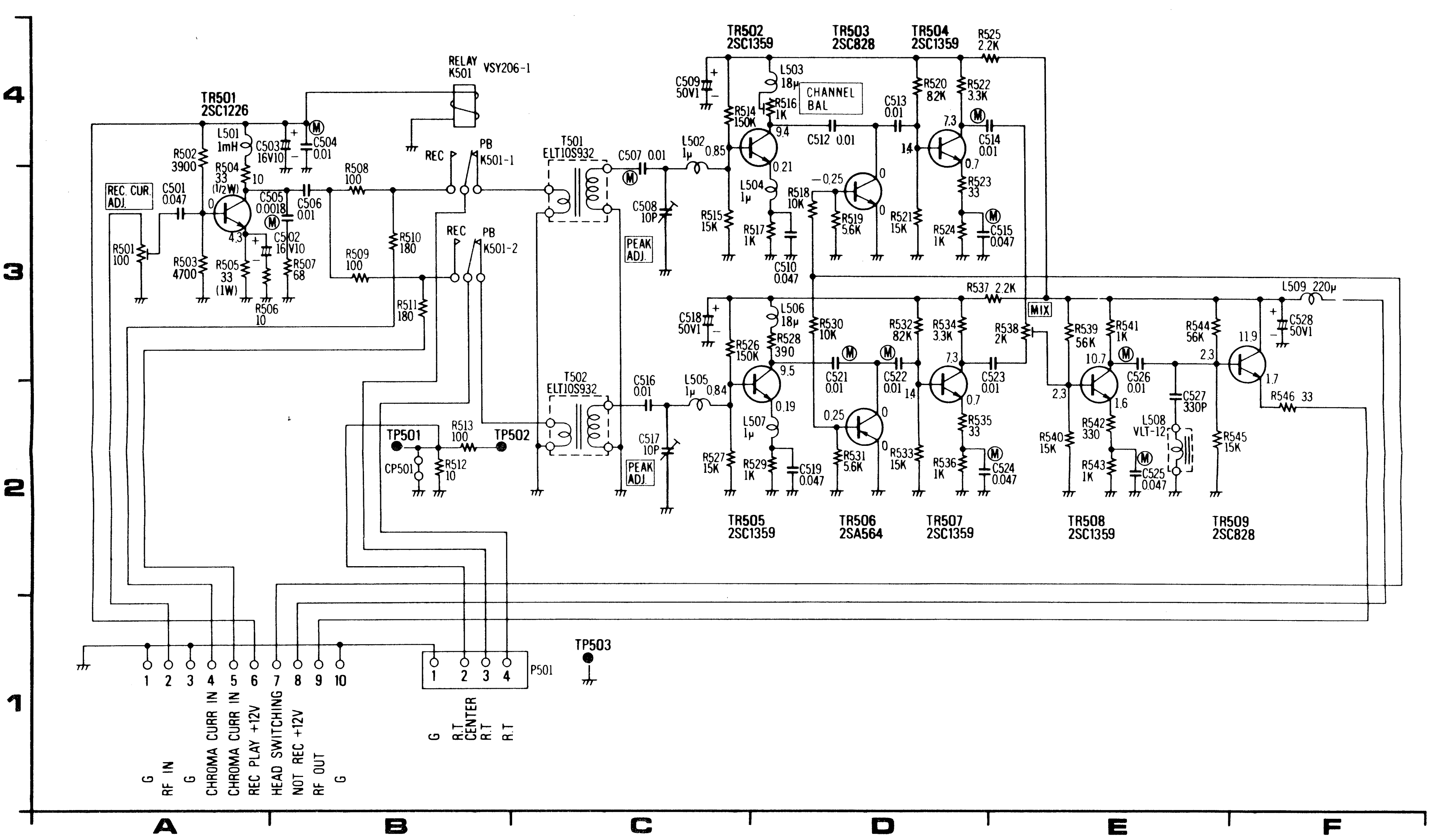
DC Motor Circuit (MGL12C)

Transport Circuit (VEP0630E)

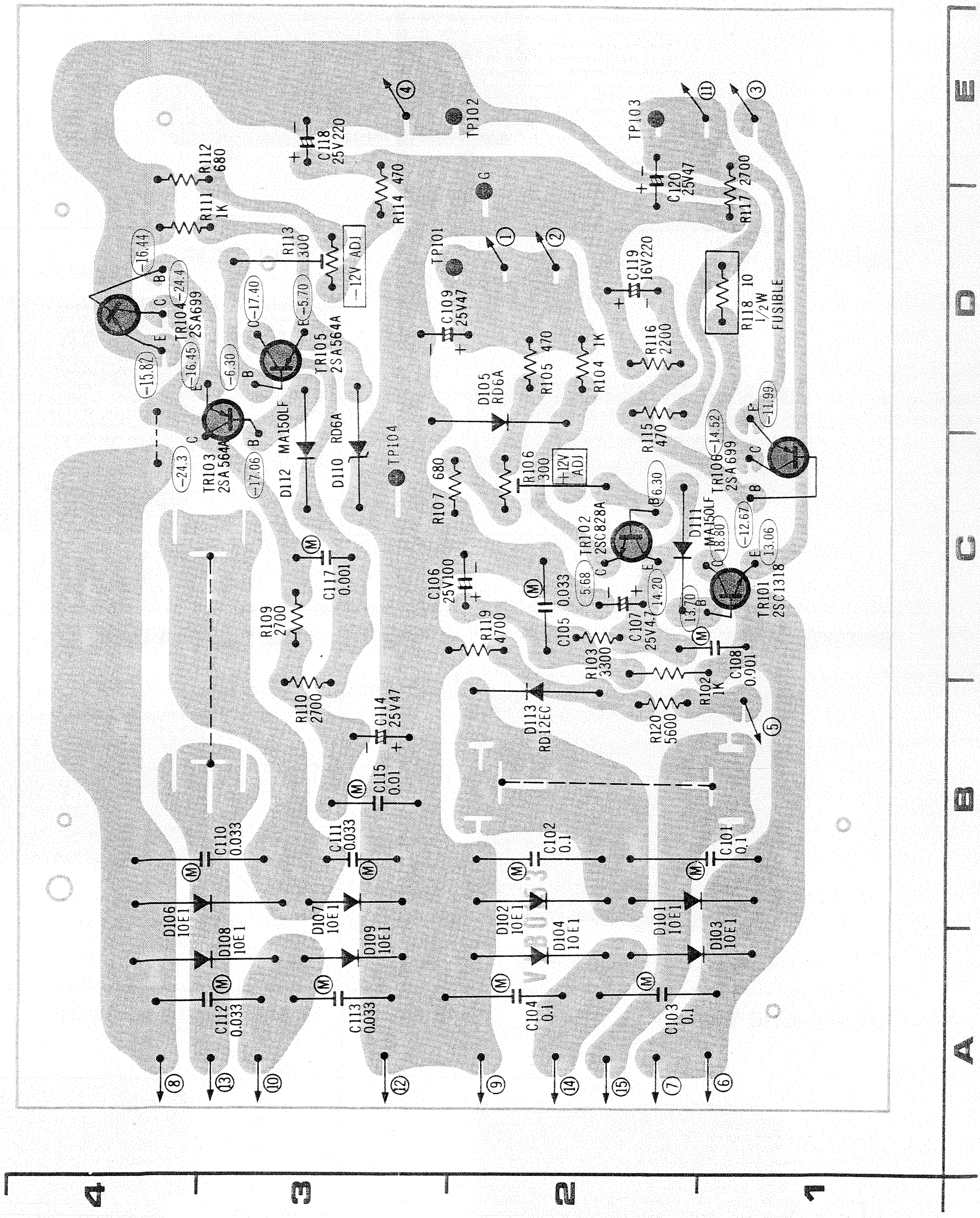
HEAD & RECORDING AMP. CIRCUIT BLOCK DIAGRAM


Rec Current Adj.
R501
Rec Amp.
TR501
K501-1
REC
PB
P.B Amp.
TR502
P.B Output
TR504
Switching
TR503
K501-2
REC
PB
P.B Amp.
TR505
P.B Output
TR507
Switching
TR506
Mix Adj.
R538
Mixing
TR508
Output Amp.
TR509
TR503
Ground 1
RF In 2
Ground 3
Chroma Current In 4
5 Chroma Current In
6 Rec Play +12V
7 Head Switch
8 Not Rec +12V
9 RF Out
10 Ground
TP502
TP501
CP501
1 Ground
2 R.T Center
3 R.T
4 R.T

HEAD & RECORDING AMP. CIRCUIT SECTION (VEP0525B)

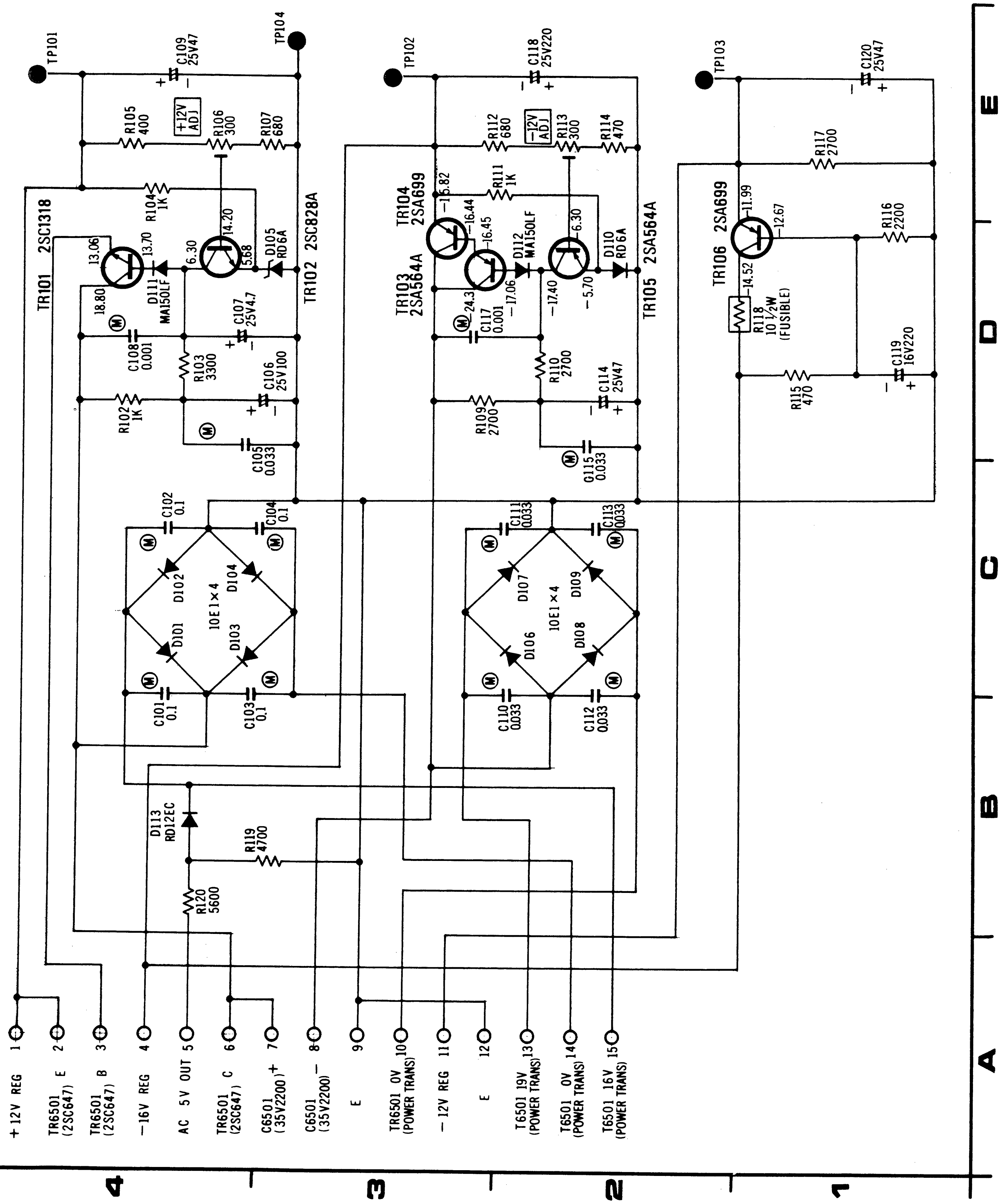

TR501
2SC1226
RELAY
K501
VSY206-1
REC CUR ADJ.
R501 100
C501 0.047
R502 3900
R503 4700
L501 1mH
R504 33 (1/2W)
R505 33 (1W)
R506 10
C502 16V10
C503 16V10
C504 0.01
C505 0.0018
C506 0.01
R507 68
R508 100
R509 100
R510 180
R511 180
REC
PB
K501-1
K501-2
T501
ELT10S932
T502
ELT10S932
TP501
TP502
R513 100
R512 10
CP501
C507 0.01
C508 10P
PEAK ADJ.
C516 0.01
C517 10P
PEAK ADJ.
L502 1μ
L505 1μ
TR502
2SC1359
TR503
2SC828
TR504
2SC1359
TR505
2SC1359
TR506
2SA564
TR507
2SC1359
TR508
2SC1359
TR509
2SC828
C509 50V1
C518 50V1
L503 18μ
CHANNEL BAL
R514 150K
R516 1K
R515 15K
L504 1μ
R517 1K
C510 0.047
C512 0.01
R518 10K
R519 5.6K
C513 0.01
R520 82K
R521 15K
R522 3.3K
R523 33
R524 1K
C514 0.01
C515 0.047
R525 2.2K
L506 18μ
R526 150K
R527 15K
R528 390
L507 1μ
R529 1K
C519 0.047
R530 10K
C521 0.01
R531 5.6K
C522 0.01
R532 82K
R533 15K
R534 3.3K
R535 33
R536 1K
C523 0.01
C524 0.047
R537 2.2K
MIX
R538 2K
R539 56K
R540 15K
R541 1K
R542 330
R543 1K
C525 0.047
C526 0.01
C527 330P
L508 VLT-12
R544 56K
R545 15K
R546 33
C528 50V1
L509 220μ
0.85
9.4
0.21
-0.25
0
0
14
7.3
0.7
0.84
9.5
0.19
0.25
0
0
14
7.3
0.7
2.3
10.7
1.6
2.3
11.9
1.7
4.3
0
10
TP503
P501
1 2 3 4
G
R.T CENTER
R.T
R.T
1 2 3 4 5 6 7 8 9 10
G
RF IN
G
CHROMA CURR IN
CHROMA CURR IN
REC PLAY +12V
HEAD SWITCHING
NOT REC +12V
RF OUT
G
A
B
C
D
E
F
1
2
3
4

POWER SUPPLY CIRCUIT BOARD (VEP0153A)

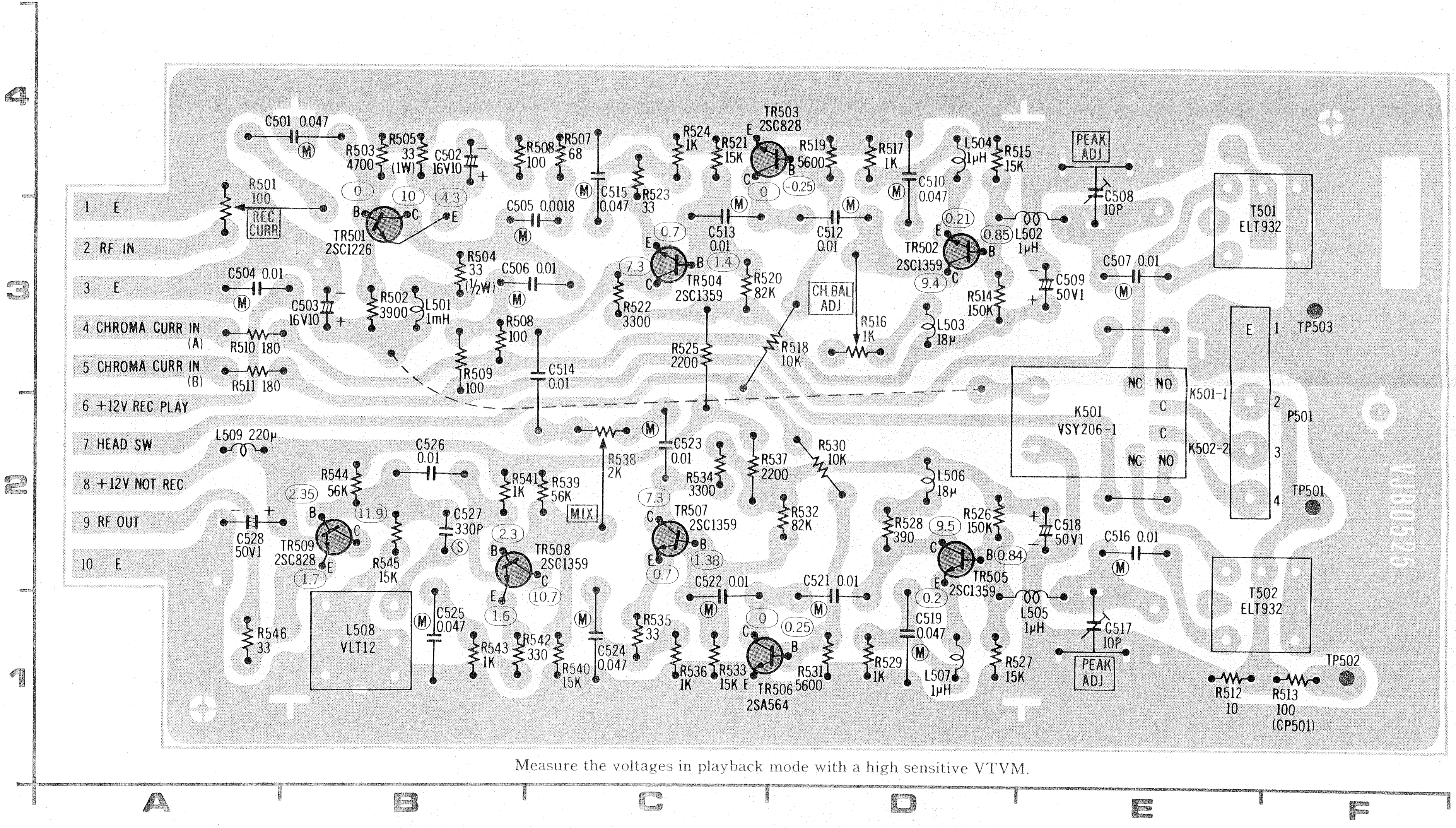


A
B
C
D
E
1
2
3
4
TR101 2SC1318
TR102 2SC828A
TR103 2SA564A
TR104 2SA699
TR105 2SA564A
TR106 2SA699
D101 10E1
D102 10E1
D103 10E1
D104 10E1
D105 RD6A
D106 10E1
D107 10E1
D108 10E1
D109 10E1
D110 RD6A
D111 MA150LF
D112 MA150LF
D113 RD12EC
C101 0.1
C102 0.1
C103 0.1
C104 0.1
C105 0.033
C106 25V100
C107 25V4.7
C108 0.001
C109 25V47
C110 0.033
C111 0.033
C112 0.033
C113 0.033
C114 25V47
C115 0.01
C117 0.001
C118 25V220
C119 16V220
C120 25V47
R102 1K
R103 3300
R104 1K
R105 470
R106 300
R107 680
R109 2700
R110 2700
R111 1K
R112 680
R113 300
R114 470
R115 470
R116 2200
R117 2700
R118 10 1/2W FUSIBLE
R119 4700
R120 5600
-12V ADJ
+12V ADJ
TP101
TP102
TP103
TP104
G
-16.44
-24.4
-15.82
-16.45
-6.30
-17.40
-5.70
-24.3
-17.06
6.30
5.68
14.20
13.70
18.80
-12.67
13.06
-14.52
-11.99
①
②
③
④
⑤
⑥
⑦
⑧
⑨
⑩
⑪
⑫
⑬
⑭
⑮

POWER SUPPLY CIRCUIT SECTION (VEP0153A)

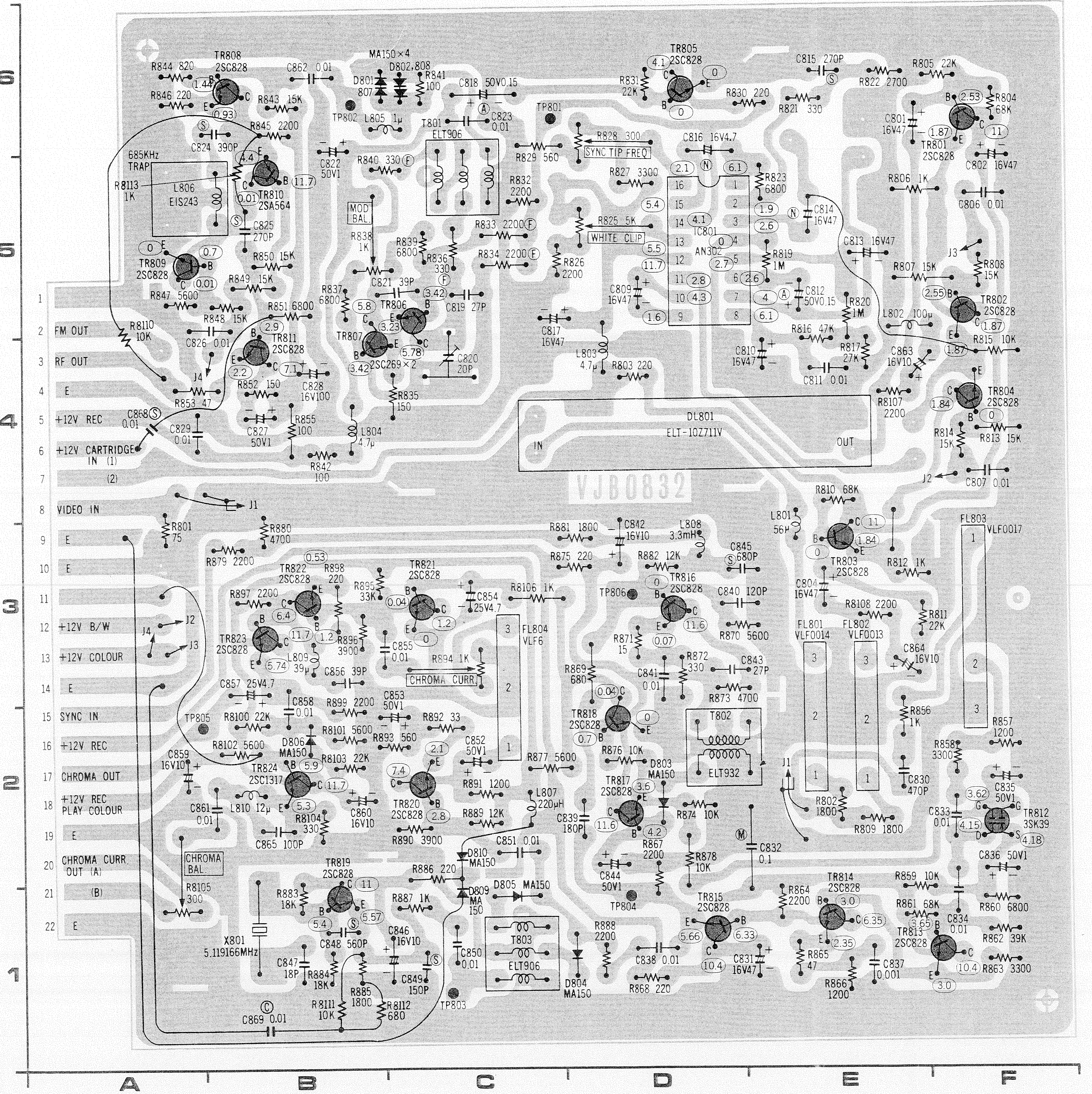

TP101
TP102
TP103
TP104
C109 25V47
R105 400
+12V ADJ
R106 300
R107 680
R104 1K
TR101 2SC1318
TR102 2SC828A
D111 MA150LF
D105 RD6A
13.06
13.70
18.80
6.30
14.20
5.68
C107 25V4.7
C108 0.001
R103 3300
C106 25V100
R102 1K
C105 0.033
C102 0.1
C104 0.1
C101 0.1
C103 0.1
D101
D102
D103
D104
10E1×4
C118 25V220
R112 680
−12V ADJ
R113 300
R114 470
R111 1K
TR104 2SA699
TR103 2SA564A
TR105 2SA564A
D112 MA150LF
D110 RD6A
−15.82
−16.44
−16.45
−24.3
−17.06
−17.40
−6.30
−5.70
C117 0.001
R110 2700
R109 2700
C114 25V47
C115 0.033
C111 0.033
C113 0.033
C110 0.033
C112 0.033
D106
D107
D108
D109
10E1×4
C120 25V47
R117 2700
TR106 2SA699
−11.99
−12.67
−14.52
R116 2200
R118 10 1/2W (FUSIBLE)
C119 16V220
R115 470
D113 RD12EC
R119 4700
R120 5600
M
+12V REG 1
TR6501 (2SC647) E 2
TR6501 (2SC647) B 3
−16V REG 4
AC 5V OUT 5
TR6501 (2SC647) C 6
C6501 (35V2200) + 7
C6501 (35V2200) − 8
E 9
TR6501 0V (POWER TRANS) 10
−12V REG 11
E 12
T6501 19V (POWER TRANS) 13
T6501 0V (POWER TRANS) 14
T6501 16V (POWER TRANS) 15
A
B
C
D
E
1
2
3
4

HEAD & RECORDING AMP. CIRCUIT BOARD (VEP0525B)

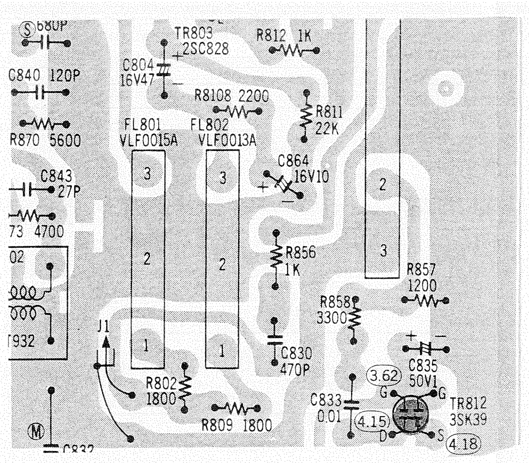

4
3
2
1
A
B
C
D
E
F
1 E
2 RF IN
3 E
4 CHROMA CURR IN (A)
5 CHROMA CURR IN (B)
6 +12V REC PLAY
7 HEAD SW
8 +12V NOT REC
9 RF OUT
10 E
C501 0.047
R501 100
REC CURR
R503 4700
R505 33 (1W)
C502 16V10
TR501 2SC1226
0
10
4.3
B
C
E
R504 33 (1/2W)
C504 0.01
C503 16V10
R502 3900
L501 1mH
C506 0.01
R508 100
R508 100
R507 68
C505 0.0018
C515 0.047
R523 33
R509 100
C514 0.01
R510 180
R511 180
R524 1K
R521 15K
TR503 2SC828
R519 5600
0
-0.25
C513 0.01
0.7
7.3
1.4
TR504 2SC1359
R522 3300
R520 82K
R525 2200
C512 0.01
CH.BAL ADJ
R518 10K
R516 1K
R517 1K
C510 0.047
L504 1μH
R515 15K
PEAK ADJ
C508 10P
0.21
0.85
TR502 2SC1359
9.4
L502 1μH
R514 150K
L503 18μ
C509 50V1
C507 0.01
T501 ELT932
K501 VSY206-1
NC NO
C
C
NC NO
K501-1
K502-2
P501
E
1
2
3
4
TP503
TP501
TP502
VJB0525
L509 220μ
C526 0.01
R544 56K
2.35
11.9
C528 50V1
TR509 2SC828
1.7
R545 15K
C527 330P
R541 1K
R539 56K
MIX
R538 2K
2.3
TR508 2SC1359
1.6
10.7
L508 VLT12
R546 33
C525 0.047
R543 1K
R542 330
R540 15K
C524 0.047
C523 0.01
R534 3300
R537 2200
R530 10K
7.3
TR507 2SC1359
0.7
1.38
R532 82K
C522 0.01
C521 0.01
R535 33
0
0.25
TR506 2SA564
R536 1K
R533 15K
R531 5600
L506 18μ
R528 390
9.5
R526 150K
TR505 2SC1359
0.84
0.2
C519 0.047
L505 1μH
C518 50V1
C516 0.01
C517 10P
PEAK ADJ
R529 1K
L507 1μH
R527 15K
T502 ELT932
R512 10
R513 100 (CP501)
M
S

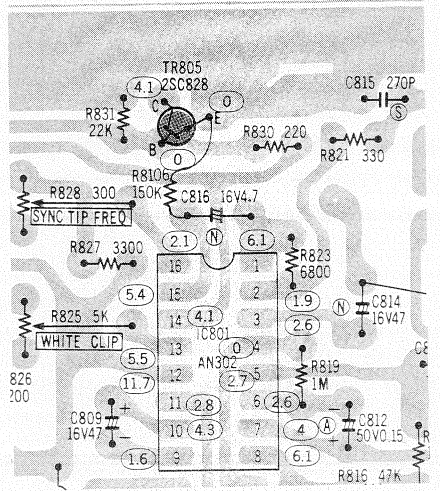
Measure the voltages in playback mode with a high sensitive VTVM.

VIDEO RECORDING CIRCUIT BOARD (VEP0832D for NV-5130A-E/B, VEP0832F for NV-5130A-A)

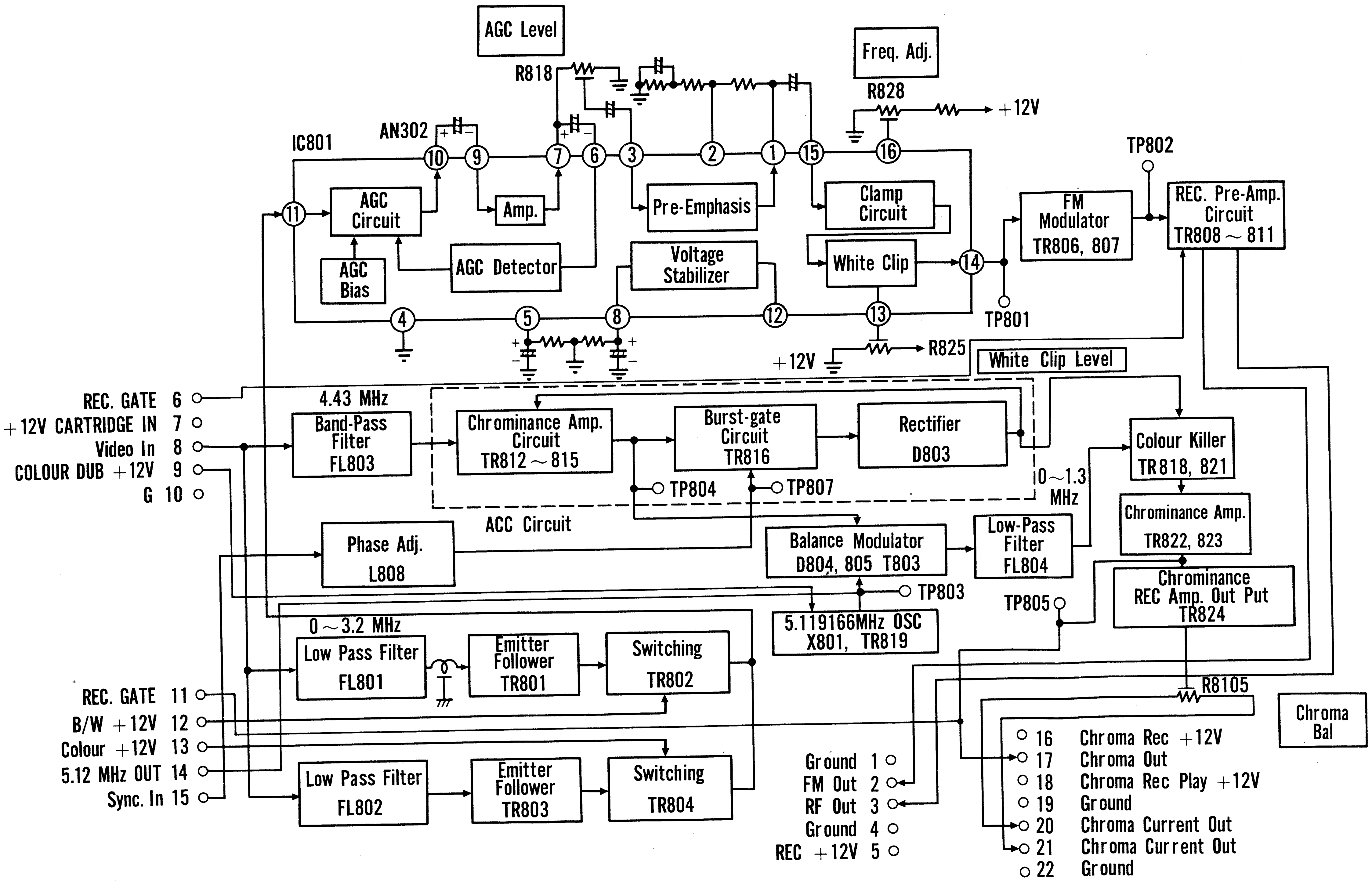

6
5
4
3
2
1
A
B
C
D
E
F
1
2 FM OUT
3 RF OUT
4 E
5 +12V REC
6 +12V CARTRIDGE IN (1)
7 (2)
8 VIDEO IN
9 E
10 E
11
12 +12V B/W
13 +12V COLOUR
14 E
15 SYNC IN
16 +12V REC
17 CHROMA OUT
18 +12V REC PLAY COLOUR
19 E
20 CHROMA CURR OUT (A)
21 (B)
22 E
TR808 2SC828
TR810 2SA564
TR809 2SC828
TR811 2SC828
TR806
TR807 2SC269×2
TR805 2SC828
TR801 2SC828
TR802 2SC828
TR804 2SC828
TR803 2SC828
TR822 2SC828
TR821 2SC828
TR823 2SC828
TR816 2SC828
TR818 2SC828
TR824 2SC1317
TR820 2SC828
TR817 2SC828
TR819 2SC828
TR815 2SC828
TR814 2SC828
TR813 2SC828
TR812 3SK39
IC801 AN302
DL801 ELT-10Z711V
IN
OUT
VJB0832
MA150×4
D801 807
D802,808
685KHz TRAP
L806 EIS243
ELT906
T801
T802 ELT932
T803 ELT906
MOD BAL
SYNC TIP FREQ
WHITE CLIP
CHROMA CURR
CHROMA BAL
FL801 VLF0014
FL802 VLF0013
FL803 VLF0017
FL804 VLF6
X801 5.119166MHz
TP801
TP802
TP803
TP804
TP805
TP806
J1
J2
J3
J4

NV-5130A·A(VEP0832F)

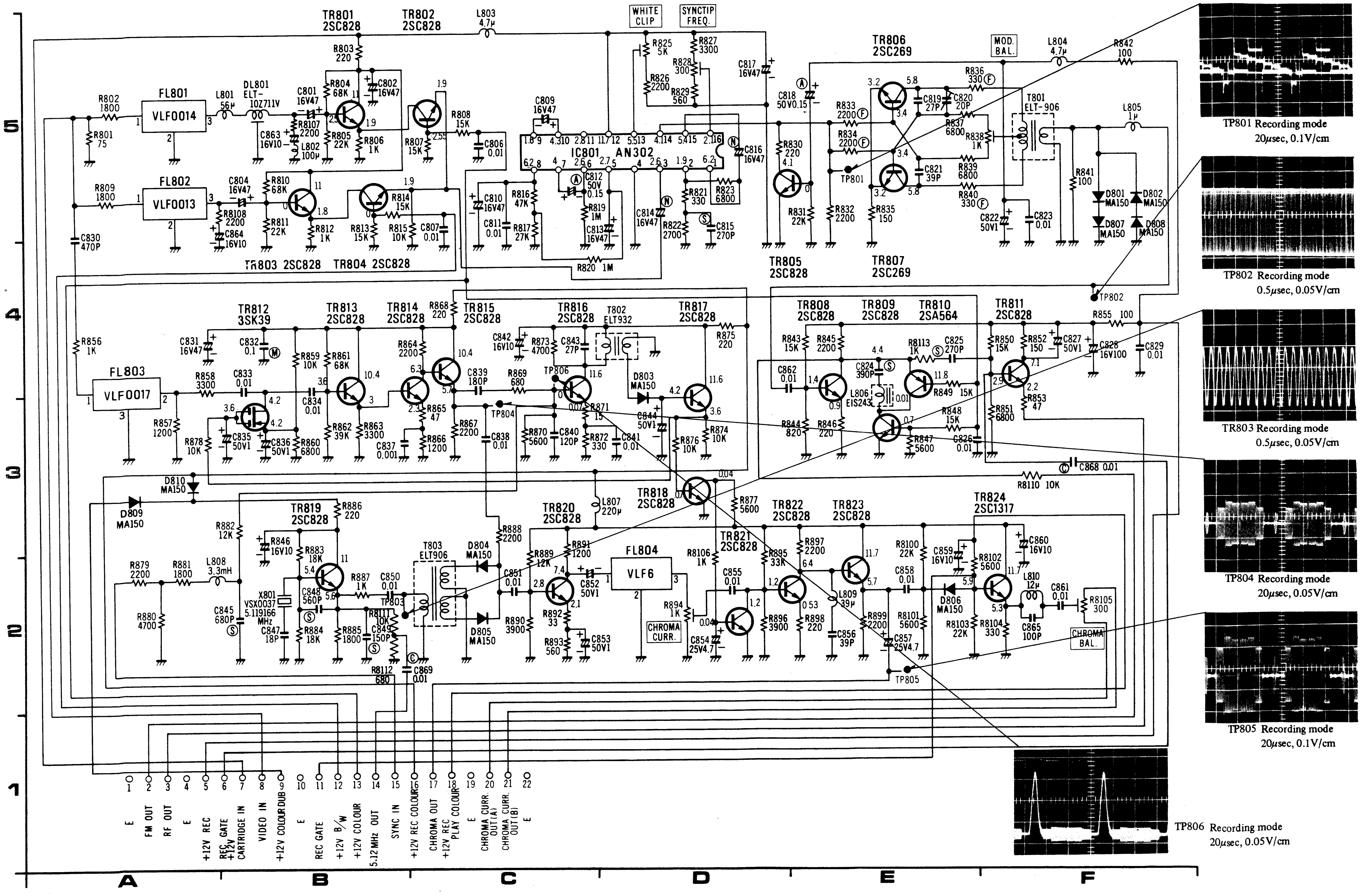

TR803 2SC828
R812 1K
C840 120P
C804 16V47
R8108 2200
R811 22K
R870 5600
FL801 VLF0015A
FL802 VLF0013A
C864 16V10
C843 27P
R856 1K
R857 1200
R858 3300
C830 470P
R802 1800
R809 1800
C833 0.01
C835 50V1
TR812 3SK39
J1


TR805 2SC828
C815 270P
R831 22K
R830 220
R821 330
R8106 150K
R828 300
C816 16V4.7
SYNC TIP FREQ
R827 3300
R823 6800
R825 5K
C814 16V47
WHITE CLIP
IC801 AN302
R819 1M
C809 16V47
C812 50V0.15
R816 47K

VIDEO RECORDING CIRCUIT BLOCK DIAGRAM


AGC Level
R818
Freq. Adj.
R828
+12V
IC801
AN302
⑩ ⑨ ⑦ ⑥ ③ ② ① ⑮ ⑯
TP802
⑪
AGC Circuit
Amp.
Pre-Emphasis
Clamp Circuit
FM Modulator TR806, 807
REC. Pre-Amp. Circuit TR808 ~ 811
AGC Bias
AGC Detector
Voltage Stabilizer
White Clip
⑭
④ ⑤ ⑧ ⑫ ⑬
TP801
+12V
R825
White Clip Level
REC. GATE 6
+12V CARTRIDGE IN 7
Video In 8
COLOUR DUB +12V 9
G 10
4.43 MHz
Band-Pass Filter FL803
Chrominance Amp. Circuit TR812 ~ 815
Burst-gate Circuit TR816
Rectifier D803
Colour Killer TR818, 821
TP804
TP807
0~1.3 MHz
ACC Circuit
Chrominance Amp. TR822, 823
Phase Adj. L808
Balance Modulator D804, 805 T803
Low-Pass Filter FL804
TP803
Chrominance REC Amp. Out Put TR824
TP805
0 ~ 3.2 MHz
5.119166MHz OSC X801, TR819
Low Pass Filter FL801
Emitter Follower TR801
Switching TR802
R8105
Chroma Bal
REC. GATE 11
B/W +12V 12
Colour +12V 13
5.12 MHz OUT 14
Sync. In 15
Low Pass Filter FL802
Emitter Follower TR803
Switching TR804
Ground 1
FM Out 2
RF Out 3
Ground 4
REC +12V 5
16 Chroma Rec +12V
17 Chroma Out
18 Chroma Rec Play +12V
19 Ground
20 Chroma Current Out
21 Chroma Current Out
22 Ground

VIDEO RECORDING CIRCUIT SECTION (VEP0832D for NV-5130A-E/-B, VEP0832F for NV-5130A-A)


TR801 2SC828
TR802 2SC828
TR803 2SC828
TR804 2SC828
TR805 2SC828
TR806 2SC269
TR807 2SC269
TR808 2SC828
TR809 2SC828
TR810 2SA564
TR811 2SC828
TR812 3SK39
TR813 2SC828
TR814 2SC828
TR815 2SC828
TR816 2SC828
TR817 2SC828
TR818 2SC828
TR819 2SC828
TR820 2SC828
TR821 2SC828
TR822 2SC828
TR823 2SC828
TR824 2SC1317
IC801 AN302
FL801 VLF0014
FL802 VLF0013
FL803 VLF0017
FL804 VLF6
DL801 ELT-10Z711V
T801 ELT-906
T802 ELT932
T803 ELT906
L806 EIS243
X801 VSX0037 5.119166 MHz
WHITE CLIP
SYNCTIP FREQ.
MOD. BAL.
CHROMA CURR.
CHROMA BAL.
TP801
TP802
TP803
TP804
TP805
TP806
1 E
2 FM OUT
3 RF OUT
4 E
5 +12V REC
6 REC GATE +12V CARTRIDGE IN
7 VIDEO IN
8 +12V COLOUR DUB
9 E
10 REC GATE
11 +12V B/W
12 +12V COLOUR
13 5.12MHz OUT
14 SYNC IN
15 +12V REC COLOUR
16 CHROMA OUT
17 +12V REC PLAY COLOUR
18 E
19 CHROMA CURR OUT(A)
20 CHROMA CURR. OUT(B)
21 E
22
A
B
C
D
E
F
1
2
3
4
5

TP801 Recording mode 20*μ*sec, 0.1V/cm

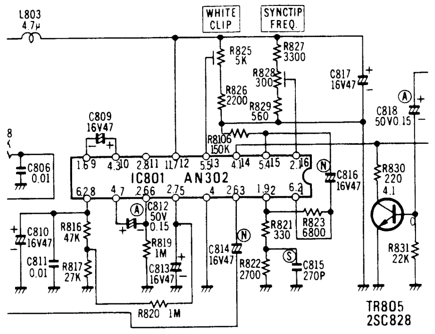
TP802 Recording mode 0.5*μ*sec, 0.05V/cm

TR803 Recording mode 0.5*μ*sec, 0.05V/cm

TP804 Recording mode 20*μ*sec, 0.05V/cm

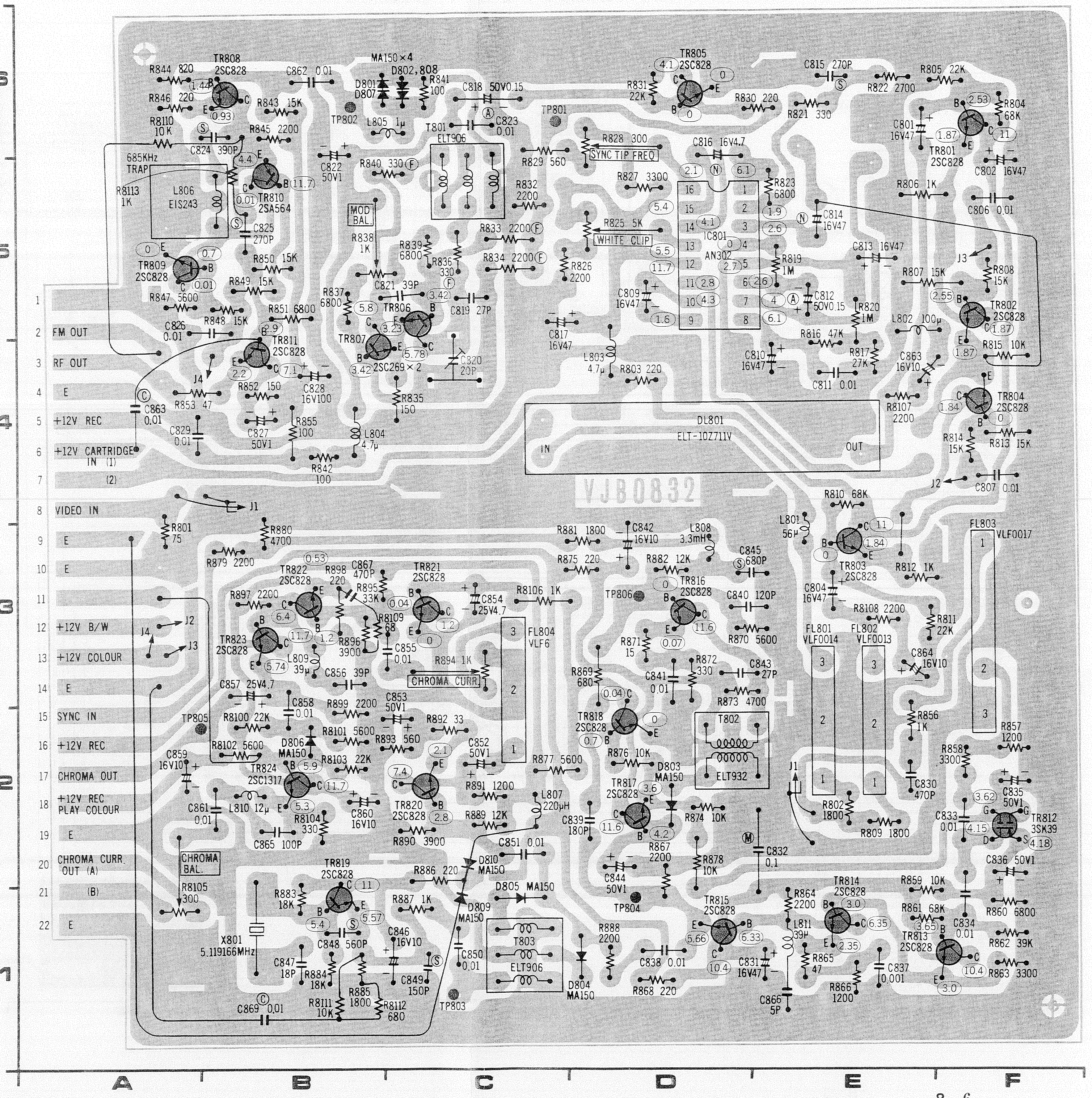
TP805 Recording mode 20*μ*sec, 0.1V/cm

TP806 Recording mode 20*μ*sec, 0.05V/cm

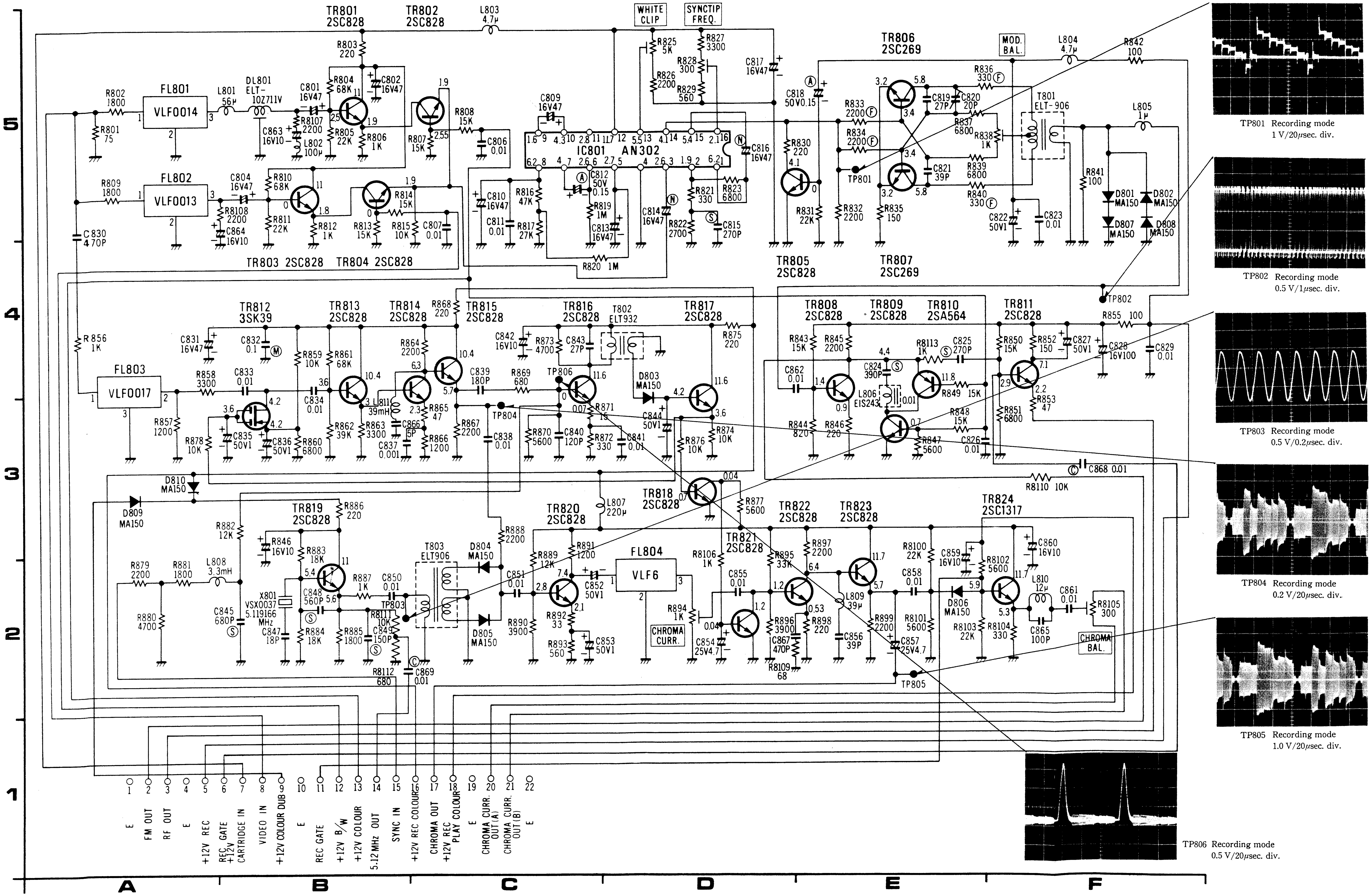

IC801 AN302
WHITE CLIP
SYNCTIP FREQ.
TR805 2SC828

NV-5130A-A (VEP0832F)

VIDEO RECORDING CIRCUIT BOARD (VEP0832E for NV-5130A-EF)


6
5
4
3
2
1
A
B
C
D
E
F
1
2 FM OUT
3 RF OUT
4 E
5 +12V REC
6 +12V CARTRIDGE IN (1)
7 (2)
8 VIDEO IN
9 E
10 E
11
12 +12V B/W
13 +12V COLOUR
14 E
15 SYNC IN
16 +12V REC
17 CHROMA OUT
18 +12V REC PLAY COLOUR
19 E
20 CHROMA CURR OUT (A)
21 (B)
22 E
TR808 2SC828
R844 820
R846 220
R8110 10K
C862 0.01
MA150×4
D802,808
D801
D807
R841 100
C818 50V0.15
TP802
L805 1μ
T801 ELT906
C823 0.01
TP801
R843 15K
R845 2200
C824 390P
685KHz TRAP
L806 EIS243
R8113 1K
TR810 2SA564
C825 270P
C822 50V1
R840 330
MOD BAL.
R838 1K
R839 6800
R836 330
R829 560
R828 300
SYNC TIP FREQ
R832 2200
R833 2200
R834 2200
R825 5K
WHITE CLIP
R826 2200
R827 3300
C816 16V4.7
IC801 AN302
R823 6800
C814 16V47
R819 1M
C812 50V0.15
R820 1M
TR805 2SC828
R831 22K
R830 220
R821 330
C815 270P
R822 2700
R805 22K
R804 68K
C801 16V47
TR801 2SC828
C802 16V47
R806 1K
C806 0.01
C813 16V47
R807 15K
J3
R808 15K
TR802 2SC828
L802 100μ
R815 10K
C863 16V10
R816 47K
R817 27K
C810 16V47
C811 0.01
TR809 2SC828
R850 15K
R849 15K
R847 5600
R848 15K
R851 6800
C826 0.01
TR811 2SC828
C821 39P
R837 6800
TR806
TR807
2SC269×2
C819 27P
C820 20P
C809 16V47
C817 16V47
L803 4.7μ
R803 220
J4
R853 47
R852 150
C828 16V100
C863 0.01
C829 0.01
C827 50V1
R855 100
R842 100
L804 4.7μ
R835 150
DL801 ELT-10Z711V
IN
OUT
VJB0832
R8107 2200
TR804 2SC828
R814 15K
R813 15K
J2
C807 0.01
J1
R801 75
R880 4700
R879 2200
TR822 2SC828
R898 220
C867 470P
TR821 2SC828
R897 2200
R895 33K
R8109 68
R896 3900
TR823 2SC828
L809 39μ
C856 39P
C855 0.01
C854 25V4.7
FL804 VLF6
R894 1K
CHROMA CURR
C857 25V4.7
TP805
R8100 22K
C858 0.01
R899 2200
C853 50V1
R892 33
D806 MA150
R8101 5600
R893 560
R8102 5600
C859 16V10
TR824 2SC1317
R8103 22K
C852 50V1
TR820 2SC828
R891 1200
R877 5600
C861 0.01
L810 12μ
R8104 330
C860 16V10
R889 12K
L807 220μH
C865 100P
R890 3900
C851 0.01
CHROMA BAL.
R8105 300
TR819 2SC828
R886 220
D810 MA150
D805 MA150
R883 18K
R887 1K
D809 MA150
X801 5.119166MHz
C848 560P
C846 16V10
T803 ELT906
C847 18P
R884 18K
C850 0.01
C849 150P
R8111 10K
R885 1800
R8112 680
C869 0.01
TP803
R881 1800
C842 16V10
L808 3.3mH
R875 220
R882 12K
C845 680P
TP806
TR816 2SC828
C840 120P
R870 5600
R871 15
R872 330
C841 0.01
C843 27P
R869 680
R873 4700
TR818 2SC828
T802 ELT932
R876 10K
D803 MA150
TR817 2SC828
R874 10K
R867 2200
C839 180P
R878 10K
C832 0.1
C844 50V1
TP804
D804 MA150
R888 2200
C838 0.01
R868 220
TR815 2SC828
L811 39μ
C831 16V47
C866 5P
R865 47
R864 2200
R866 1200
C837 0.001
TR814 2SC828
TR813 2SC828
C834 0.01
R810 68K
L801 56μ
TR803 2SC828
C804 16V47
R812 1K
R8108 2200
R811 22K
FL801 VLF0014
FL802 VLF0013
C864 16V10
R856 1K
R858 3300
C830 470P
R802 1800
R809 1800
FL803 VLF0017
R857 1200
C835 50V1
C833 0.01
TR812 3SK39
C836 50V1
R859 10K
R861 68K
R860 6800
R862 39K
R863 3300

VIDEO RECORDING CIRCUIT SECTION (VEP0832E for NV-5130A-EF)


TR801 2SC828
TR802 2SC828
L803 4.7µ
WHITE CLIP
SYNCTIP FREQ.
TR806 2SC269
MOD. BAL.
L804 4.7µ
R842 100
FL801 VLF0014
FL802 VLF0013
DL801 ELT-10Z711V
IC801 AN302
T801 ELT-906
L805 1µ
TR803 2SC828
TR804 2SC828
TR805 2SC828
TR807 2SC269
TP801
TP802
D801 MA150
D802 MA150
D807 MA150
D808 MA150
TR812 3SK39
TR813 2SC828
TR814 2SC828
TR815 2SC828
TR816 2SC828
T802 ELT932
TR817 2SC828
TR808 2SC828
TR809 2SC828
TR810 2SA564
TR811 2SC828
FL803 VLF0017
TP806
TP804
D803 MA150
L806 EIS243
R855 100
D810 MA150
D809 MA150
TR818 2SC828
TR819 2SC828
TR820 2SC828
TR821 2SC828
TR822 2SC828
TR823 2SC828
TR824 2SC1317
T803 ELT906
D804 MA150
D805 MA150
FL804 VLF6
L807 220µ
L808 3.3mH
L809 39µ
L810 12µ
X801 VSX0037 5.119166 MHz
TP803
TP805
D806 MA150
CHROMA CURR.
CHROMA BAL.
R8110 10K
C868 0.01
1 E
2 FM OUT
3 RF OUT
4 E
5 +12V REC
6 REC GATE +12V
7 CARTRIDGE IN
8 VIDEO IN
9 +12V COLOUR DUB
10 E
11 REC GATE
12 +12V B/W
13 +12V COLOUR
14 5.12MHz OUT
15 SYNC IN
16 +12V REC COLOUR
17 CHROMA OUT
18 +12V REC PLAY COLOUR
19 E
20 CHROMA CURR. OUT(A)
21 CHROMA CURR. OUT(B)
22 E
1
2
3
4
5
A
B
C
D
E
F

TP801 Recording mode 1 V/20µsec. div.

TP802 Recording mode 0.5 V/1µsec. div.

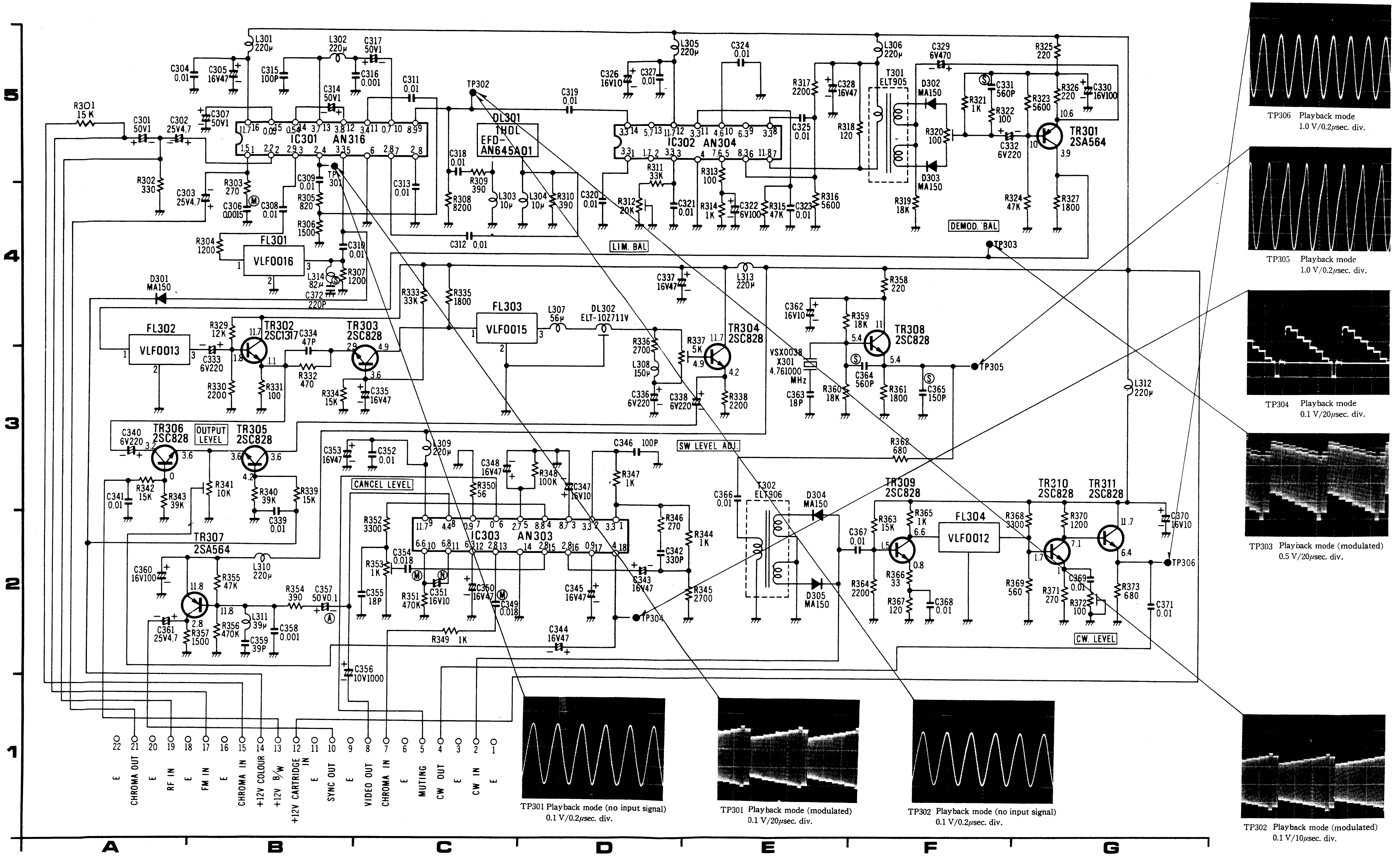
TP803 Recording mode 0.5 V/0.2µsec. div.

TP804 Recording mode 0.2 V/20µsec. div.

TP805 Recording mode 1.0 V/20µsec. div.

TP806 Recording mode 0.5 V/20µsec. div.

VIDEO PLAYBACK CIRCUIT SECTION (VEP0335B for NV-5130A-EF)


IC301 AN316
IC302 AN304
IC303 AN303
DL301 THDL EFD-AN645A01
DL302 ELT-10Z711V
FL301 VLF0016
FL302 VLF0013
FL303 VLF0015
FL304 VLF0012
T301 ELT905
T302 ELT906
TR301 2SA564
TR302 2SC1317
TR303 2SC828
TR304 2SC828
TR305 2SC828
TR306 2SC828
TR307 2SA564
TR308 2SC828
TR309 2SC828
TR310 2SC828
TR311 2SC828
D301 MA150
D302 MA150
D303 MA150
D304 MA150
D305 MA150
VSX0038 X301 4.761000 MHz
TP301
TP302
TP303
TP304
TP305
TP306
LIM. BAL
DEMOD. BAL
OUTPUT LEVEL
CANCEL LEVEL
SW LEVEL ADJ.
CW. LEVEL
R301 15K
L301 220μ
L302 220μ
C317 50V1
L305 220μ
C324 0.01
L306 220μ
C329 6V470
R325 220
L313 220μ
R358 220
L312 220μ
L309 220μ
L310 220μ
C356 10V1000
22 E
21 CHROMA OUT
20 E
19 RF IN
18 E
17 FM IN
16 E
15 CHROMA IN
14 +12V COLOUR
13 +12V B/W
12 +12V CARTRIDGE IN
11
10 SYNC OUT
9 E
8 VIDEO OUT
7 CHROMA IN
6 E
5 MUTING
4 CW OUT
3 E
2 CW IN
1 E
5
4
3
2
1
A
B
C
D
E
F
G

TP306 Playback mode
1.0 V/0.2μsec. div.

TP305 Playback mode
1.0 V/0.2μsec. div.

TP304 Playback mode
0.1 V/20μsec. div.

TP303 Playback mode (modulated)
0.5 V/20μsec. div.

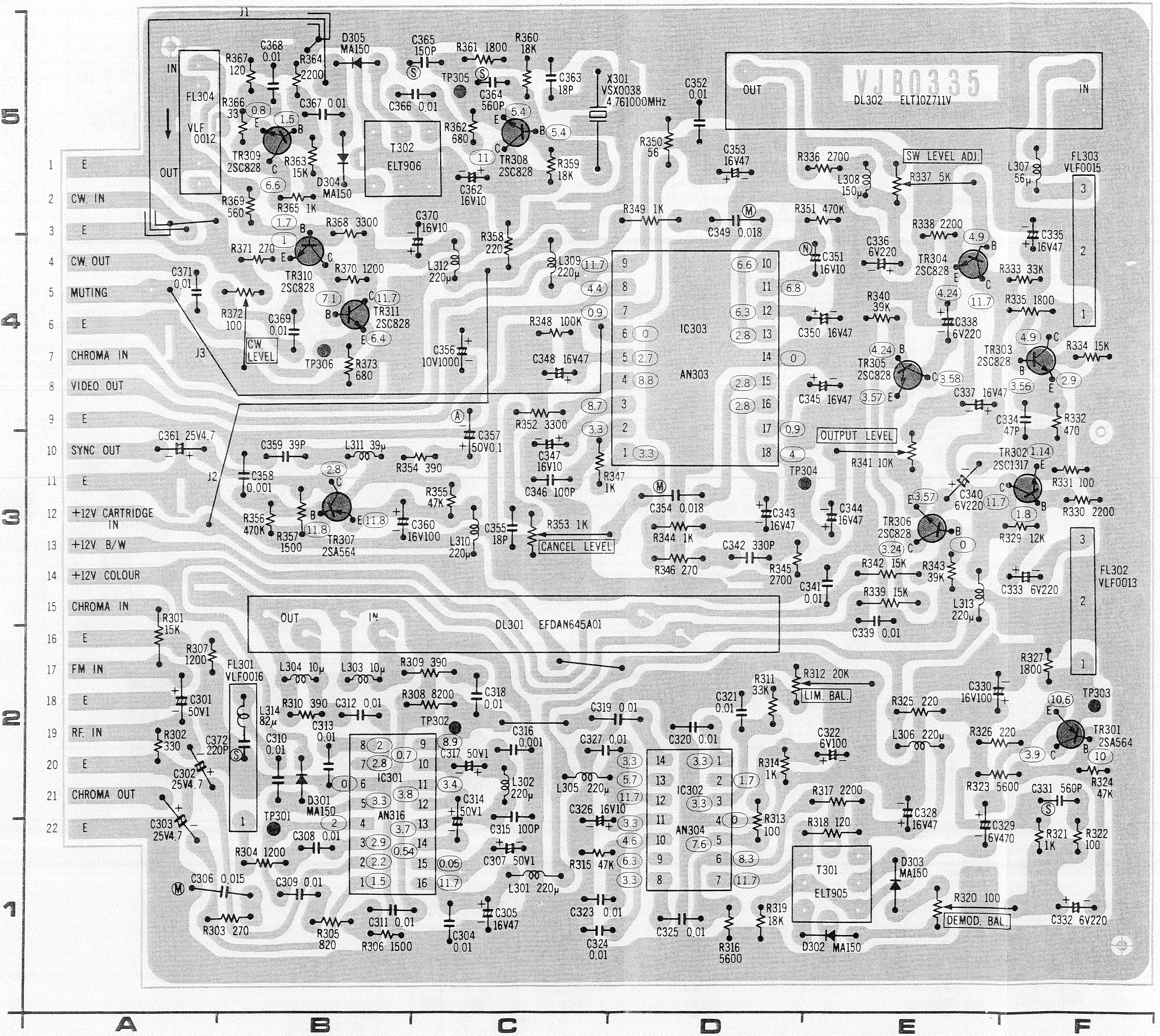
TP302 Playback mode (modulated)
0.1 V/10μsec. div.

TP301 Playback mode (no input signal)
0.1 V/0.2μsec. div.

TP301 Playback mode (modulated)
0.1 V/20μsec. div.

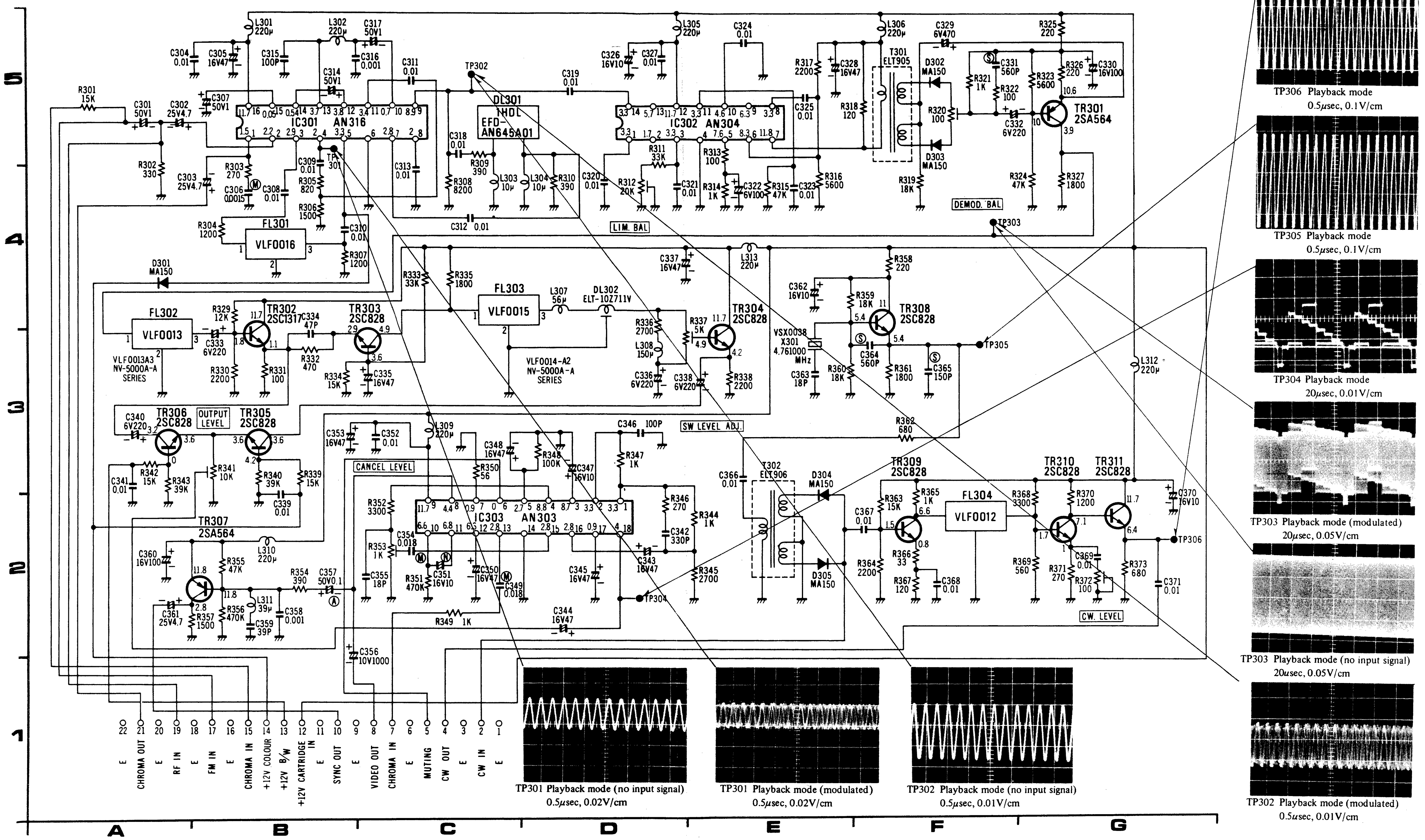
TP302 Playback mode (no input signal)
0.1 V/0.2μsec. div.

VIDEO PLAYBACK CIRCUIT BOARD (VEP0335B for NV-5130A-EF)



5
4
3
2
1
A
B
C
D
E
F
1 E
2 CW. IN
3 E
4 CW. OUT
5 MUTING
6 E
7 CHROMA IN
8 VIDEO OUT
9 E
10 SYNC OUT
11 E
12 +12V CARTRIDGE IN
13 +12V B/W
14 +12V COLOUR
15 CHROMA IN
16 E
17 FM IN
18 E
19 RF. IN
20 E
21 CHROMA OUT
22 E
J1
J2
J3
IN
OUT
FL304 VLF0012
D305 MA150
C368 0.01
R367 120
R364 2200
R366 33
C367 0.01
TR309 2SC828
R363 15K
D304 MA150
R369 560
R365 1K
T302 ELT906
C365 150P
R361 1800
R360 18K
TP305
C366 0.01
C364 560P
C363 18P
R362 680
TR308 2SC828
R359 18K
C362 16V10
X301 VSX0038 4.761000MHz
C352 0.01
R350 56
C353 16V47
OUT
VJB0335
DL302 ELT10Z711V
IN
R336 2700
SW LEVEL ADJ.
L308 150μ
R337 5K
L307 56μ
FL303 VLF0015
R368 3300
C370 16V10
R358 220
L309 220μ
R371 270
TR310 2SC828
R370 1200
L312 220μ
C371 0.01
R372 100
TR311 2SC828
C369 0.01
CW. LEVEL
TP306
R373 680
C356 10V1000
R349 1K
C349 0.018
R351 470K
C351 16V10
C336 6V220
R338 2200
TR304 2SC828
C335 16V47
R333 33K
R348 100K
IC303
AN303
C350 16V47
R340 39K
C338 6V220
R335 1800
C348 16V47
TR305 2SC828
TR303 2SC828
R334 15K
C345 16V47
C337 16V47
C334 47P
R332 470
C361 25V4.7
C359 39P
L311 39μ
C357 50V0.1
R352 3300
C347 16V10
OUTPUT LEVEL
R341 10K
TR302 2SC1317
C358 0.001
R354 390
R347 1K
C346 100P
TP304
R331 100
R356 470K
R357 1500
TR307 2SA564
R355 47K
C360 16V100
C354 0.018
C343 16V47
C344 16V47
C340 6V220
R330 2200
L310 220μ
C355 18P
R353 1K
CANCEL LEVEL
R344 1K
C342 330P
TR306 2SC828
R329 12K
R346 270
R345 2700
C341 0.01
R342 15K
R343 39K
L313 220μ
C333 6V220
FL302 VLF0013
R339 15K
C339 0.01
DL301 EFDAN645A01
R301 15K
R307 1200
FL301 VLF0016
L304 10μ
L303 10μ
R309 390
R312 20K
LIM. BAL.
R311 33K
R327 1800
C330 16V100
TP303
C301 50V1
L314 82μ
R310 390
C312 0.01
R308 8200
C318 0.01
C321 0.01
C319 0.01
R325 220
TR301 2SA564
R302 330
C372 220P
C310 0.01
C313 0.01
TP302
C316 0.001
C317 50V1
C320 0.01
C322 6V100
L306 220μ
R326 220
C302 25V4.7
D301 MA150
IC301
AN316
C327 0.01
IC302
AN304
R314 1K
R324 47K
C314 50V1
L302 220μ
L305 220μ
R323 5600
C331 560P
C303 25V4.7
TP301
C315 100P
C326 16V10
R317 2200
C328 16V47
C329 6V470
R313 100
R318 120
R321 1K
R322 100
R304 1200
C308 0.01
C307 50V1
R315 47K
T301 ELT905
D303 MA150
C306 0.015
C309 0.01
L301 220μ
R320 100
DEMOD. BAL.
C305 16V47
C323 0.01
R319 18K
C332 6V220
R303 270
R305 820
C311 0.01
R306 1500
C304 0.01
C324 0.01
C325 0.01
R316 5600
D302 MA150

VIDEO PLAYBACK CIRCUIT SECTION (VEP0335A for NV-5130A-E/B VEP0335C for NV-5130A-A)


IC301 AN316
IC302 AN304
IC303 AN303
DL301 1HDL EFD-AN645A01
DL302 ELT-10Z711V
FL301 VLF0016
FL302 VLF0013
VLF0013A3 NV-5000A-A SERIES
FL303 VLF0015
VLF0014-A2 NV-5000A-A SERIES
FL304 VLF0012
T301 ELT905
T302 ELT906
TR301 2SA564
TR302 2SC1317
TR303 2SC828
TR304 2SC828
TR305 2SC828
TR306 2SC828
TR307 2SA564
TR308 2SC828
TR309 2SC828
TR310 2SC828
TR311 2SC828
X301 VSX0038 4.761000 MHz
LIM. BAL
DEMOD. BAL
OUTPUT LEVEL
CANCEL LEVEL
SW LEVEL ADJ.
CW. LEVEL
TP301
TP302
TP303
TP304
TP305
TP306
22 E
21 CHROMA OUT
20 E
19 RF IN
18 E
17 FM IN
16 E
15 CHROMA IN
14 +12V COLOUR
13 +12V B/W
12 +12V CARTRIDGE IN
11 E
10 SYNC OUT
9 E
8 VIDEO OUT
7 CHROMA IN
6 E
5 MUTING
4 CW OUT
3 E
2 CW IN
1 E
1
2
3
4
5
A
B
C
D
E
F
G

TP306 Playback mode
0.5μsec, 0.1V/cm

TP305 Playback mode
0.5μsec, 0.1V/cm

TP304 Playback mode
20μsec, 0.01V/cm

TP303 Playback mode (modulated)
20μsec, 0.05V/cm

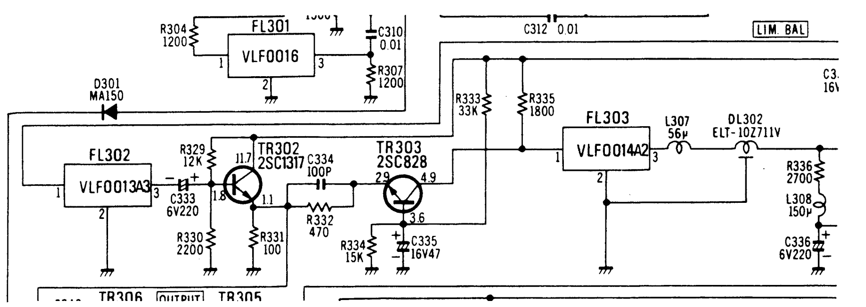
TP303 Playback mode (no input signal)
20μsec, 0.05V/cm

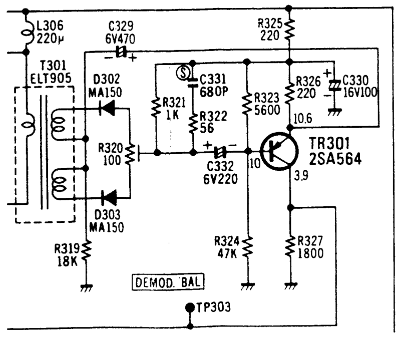
TP302 Playback mode (modulated)
0.5μsec, 0.01V/cm

TP301 Playback mode (no input signal)
0.5μsec, 0.02V/cm

TP301 Playback mode (modulated)
0.5μsec, 0.02V/cm

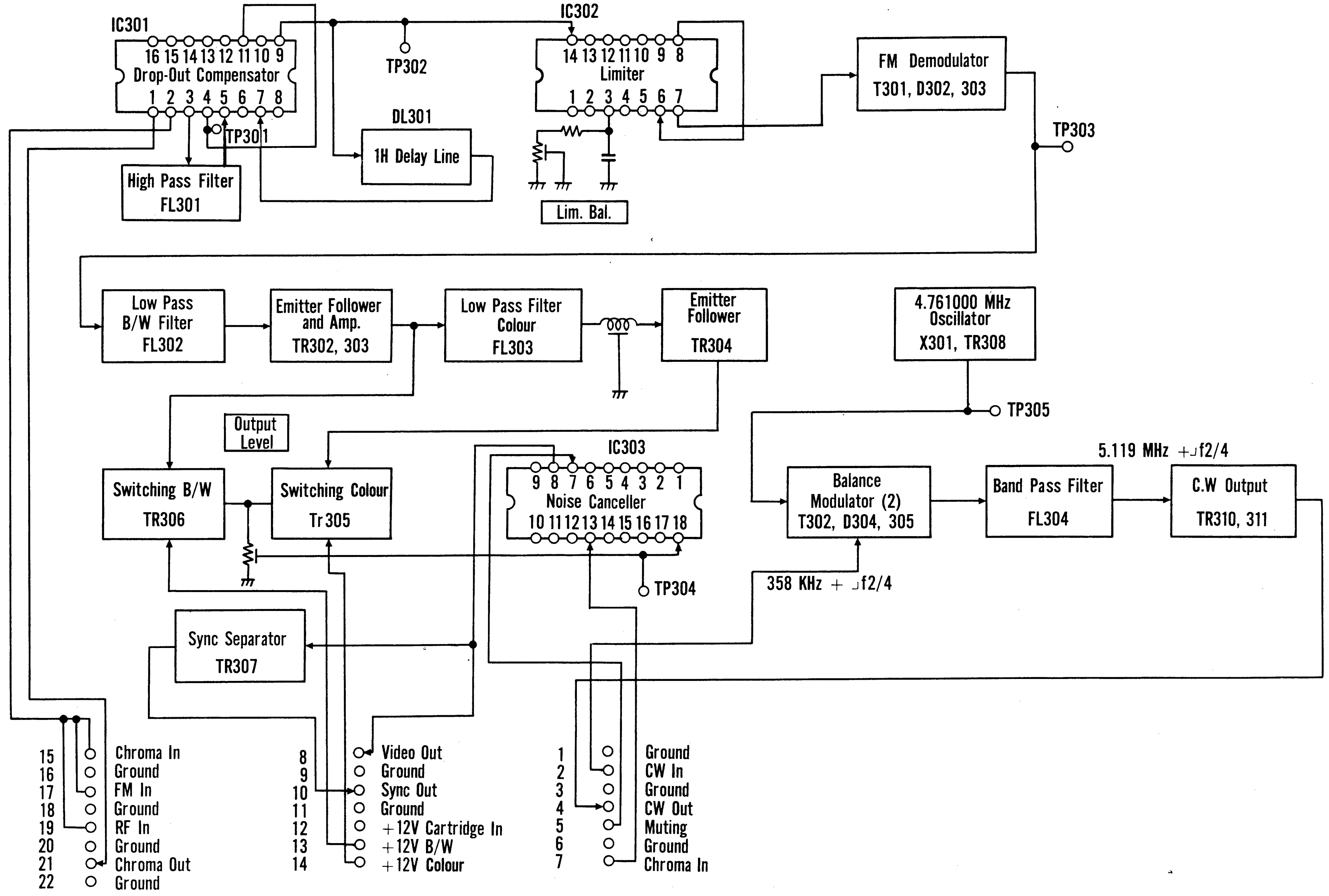
TP302 Playback mode (no input signal)
0.5μsec, 0.01V/cm


FL301 VLF0016
FL302 VLF0013A3
TR302 2SC1317
TR303 2SC828
C334 100P
FL303 VLF0014A2
DL302 ELT-10Z711V
LIM. BAL

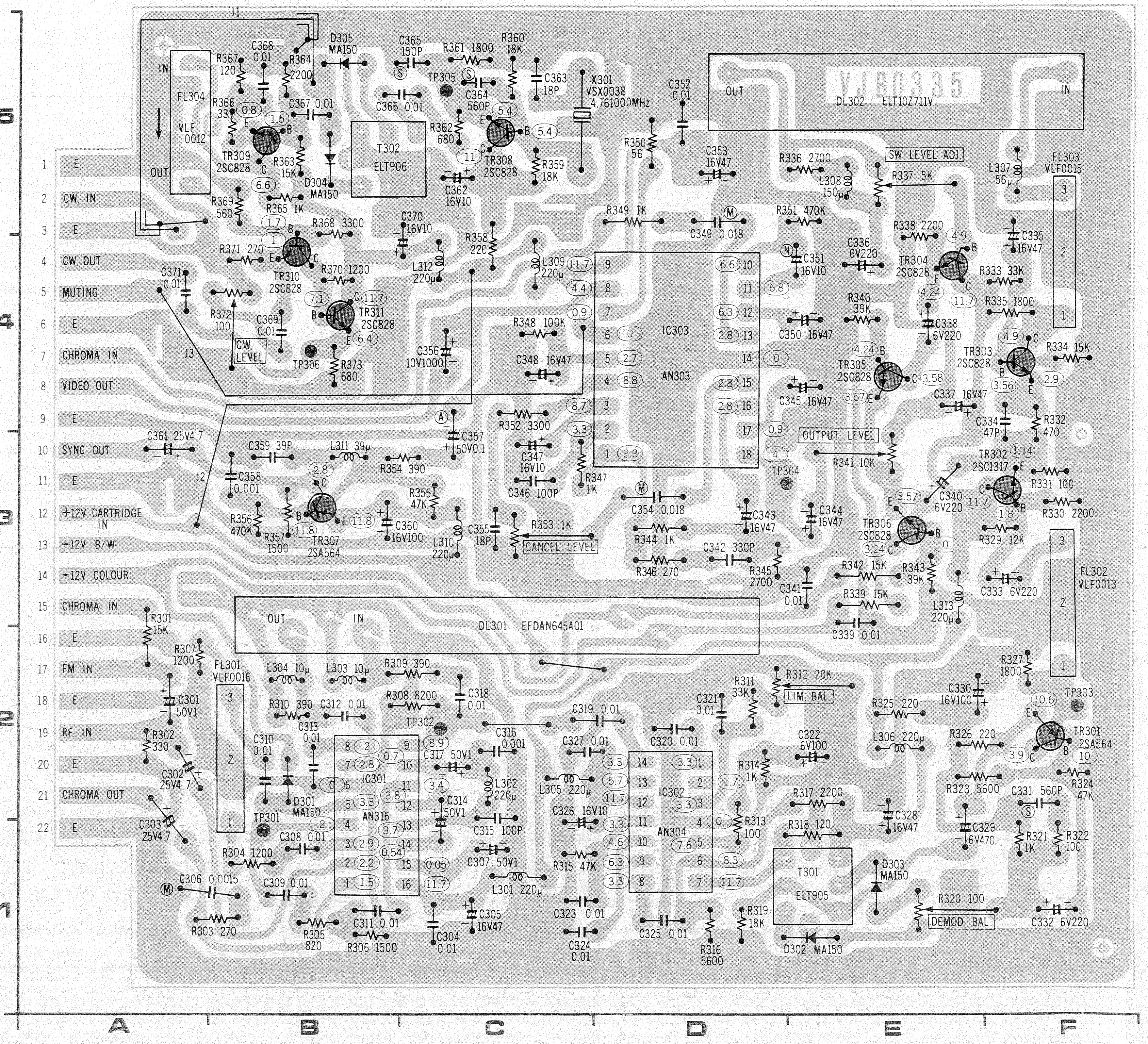

T301 ELT905
D302 MA150
D303 MA150
C331 680P
R322 56
TR301 2SA564
DEMOD. BAL
TP303

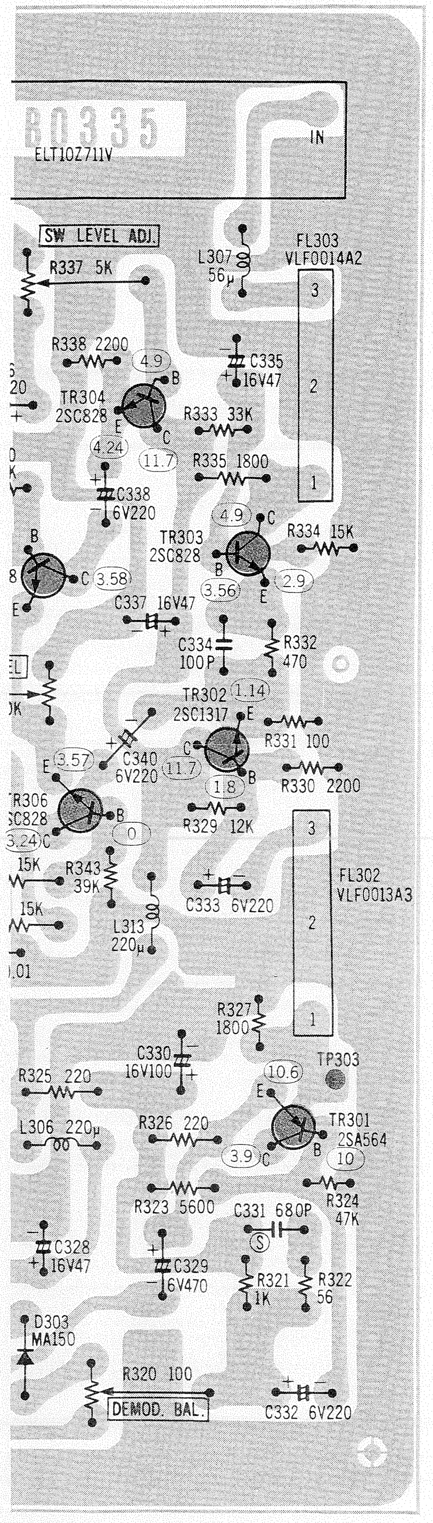
NV-5110A-A
NV-5120A-A
NV-5120B-A
NV-5130A-A (VEP0335C)

VIDEO PLAYBACK CIRCUIT BLOCK DIAGRAM


IC301
16 15 14 13 12 11 10 9
Drop-Out Compensator
1 2 3 4 5 6 7 8
TP301
High Pass Filter
FL301
TP302
DL301
1H Delay Line
IC302
14 13 12 11 10 9 8
Limiter
1 2 3 4 5 6 7
Lim. Bal.
FM Demodulator
T301, D302, 303
TP303
Low Pass
B/W Filter
FL302
Emitter Follower
and Amp.
TR302, 303
Low Pass Filter
Colour
FL303
Emitter
Follower
TR304
4.761000 MHz
Oscillator
X301, TR308
TP305
Output
Level
IC303
9 8 7 6 5 4 3 2 1
Noise Canceller
10 11 12 13 14 15 16 17 18
Switching B/W
TR306
Switching Colour
Tr305
TP304
Balance
Modulator (2)
T302, D304, 305
Band Pass Filter
FL304
5.119 MHz +⊿f2/4
C.W Output
TR310, 311
358 KHz + ⊿f2/4
Sync Separator
TR307
15
16
17
18
19
20
21
22
Chroma In
Ground
FM In
Ground
RF In
Ground
Chroma Out
Ground
8
9
10
11
12
13
14
Video Out
Ground
Sync Out
Ground
+12V Cartridge In
+12V B/W
+12V Colour
1
2
3
4
5
6
7
Ground
CW In
Ground
CW Out
Muting
Ground
Chroma In

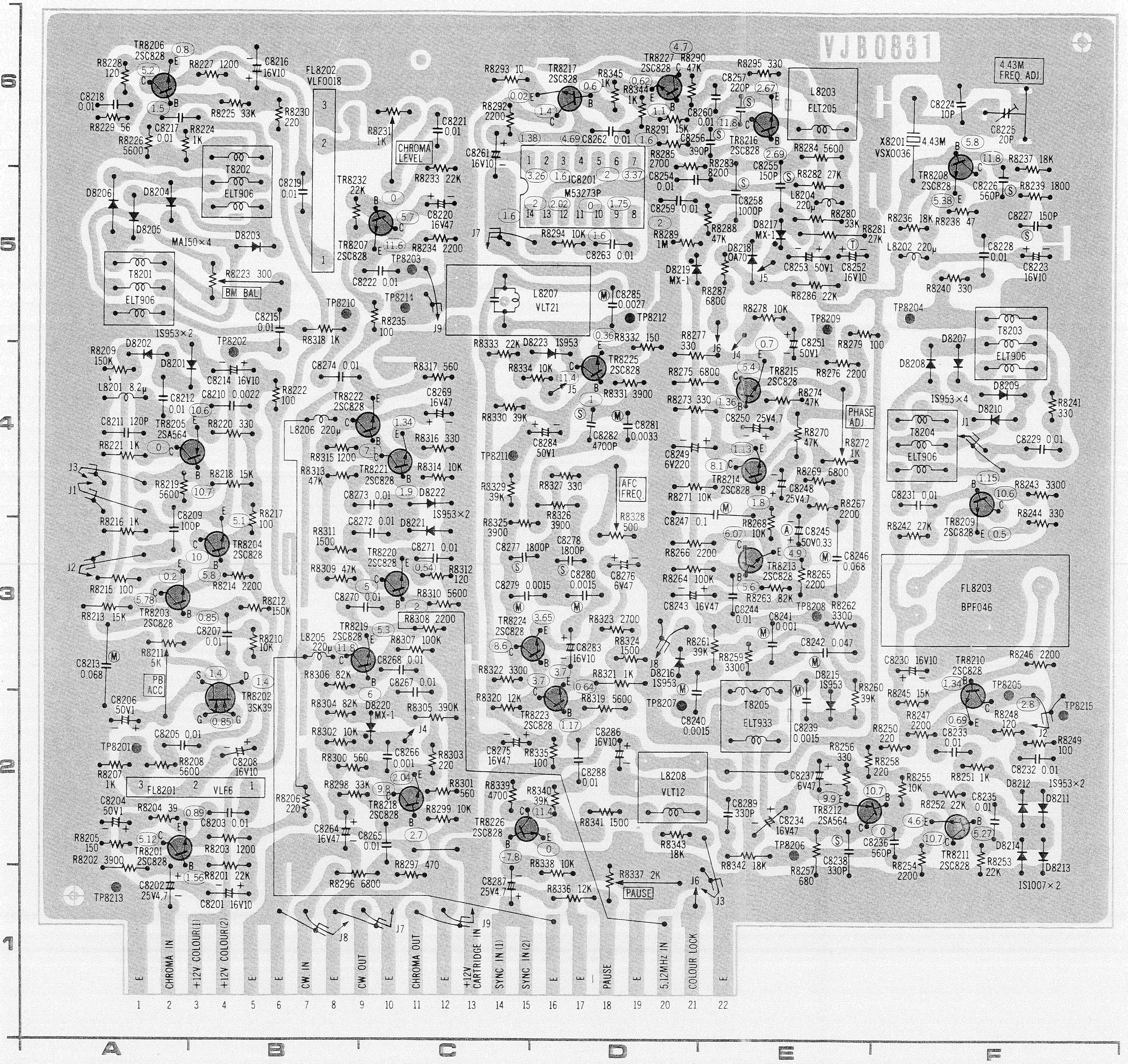
VIDEO PLAYBACK CIRCUIT BOARD (VEP0335A for NV-5130A-E/B VEP0335C for NV-5130A-A)


1 E
2 CW. IN
3 E
4 CW. OUT
5 MUTING
6 E
7 CHROMA IN
8 VIDEO OUT
9 E
10 SYNC OUT
11 E
12 +12V CARTRIDGE IN
13 +12V B/W
14 +12V COLOUR
15 CHROMA IN
16 E
17 FM IN
18 E
19 RF. IN
20 E
21 CHROMA OUT
22 E
VJB0335
DL302 ELT10Z711V
OUT
IN
SW LEVEL ADJ.
R337 5K
FL303 VLF0015
FL304 VLF 0012
T302 ELT906
X301 VSX0038 4.761000MHz
TR309 2SC828
TR310 2SC828
TR311 2SC828
TR308 2SC828
CW LEVEL
TP305
TP306
IC303 AN303
TR304 2SC828
TR305 2SC828
TR303 2SC828
TR302 2SC1317
TR306 2SC828
TR307 2SA564
OUTPUT LEVEL
R341 10K
CANCEL LEVEL
R353 1K
TP304
DL301 EFDAN645A01
FL301 VLF0016
FL302 VLF0013
IC301 AN316
IC302 AN304
LIM. BAL.
R312 20K
TR301 2SA564
TP301
TP302
TP303
T301 ELT905
D301 MA150
D302 MA150
D303 MA150
D304 MA150
D305 MA150
DEMOD. BAL.
R320 100
J1
J2
J3
1
2
3
4
5
A
B
C
D
E
F

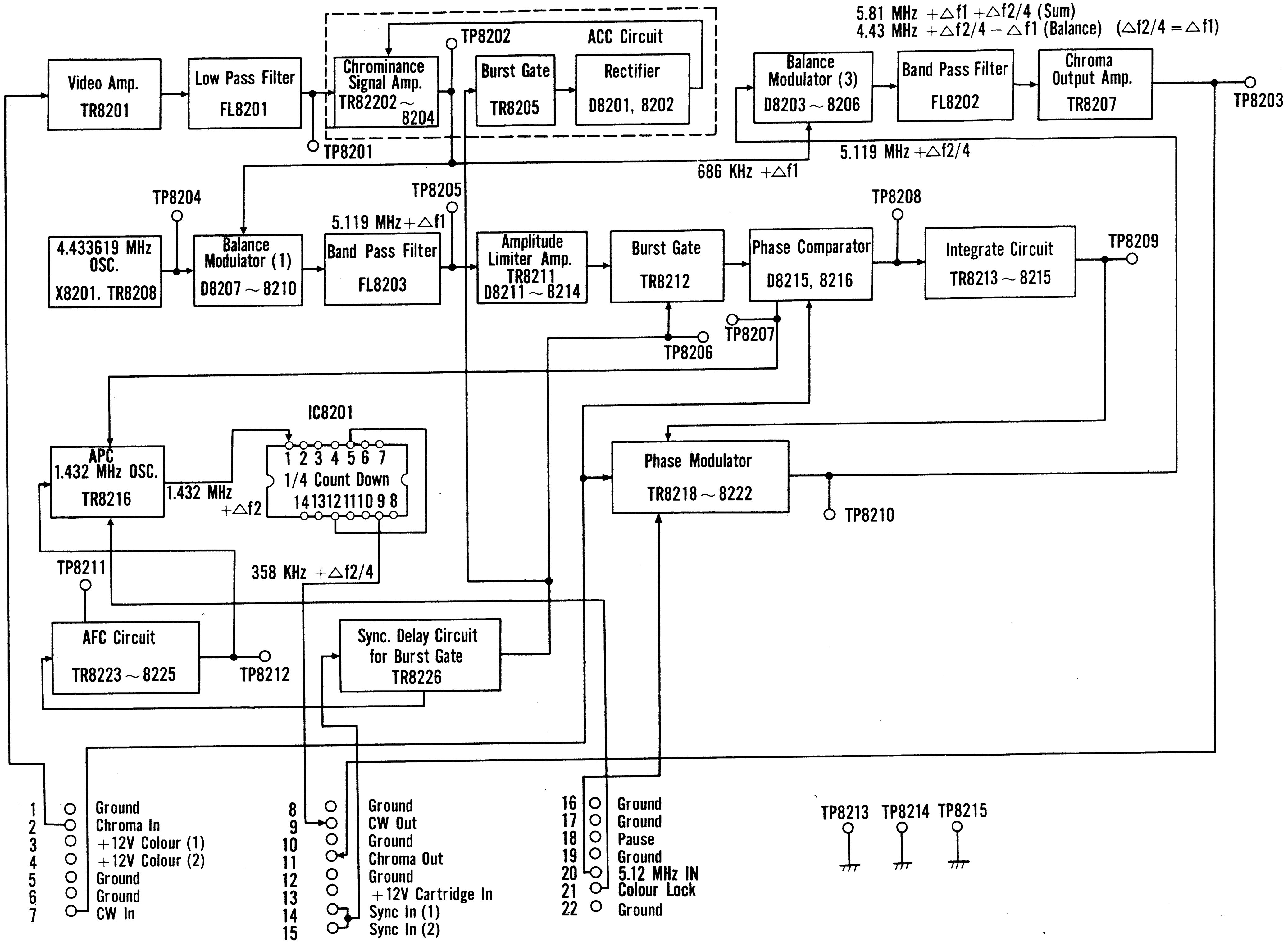

B0335
ELT10Z711V
IN
SW LEVEL ADJ.
R337 5K
FL303 VLF0014A2
FL302 VLF0013A3
TR304 2SC828
TR303 2SC828
TR302 2SC1317
TR301 2SA564
C334 100P
C331 680P
R322 56
DEMOD. BAL.
TP303

NV-5110A-A
NV-5120A-A
NV-5120B-A
NV-5130A-A (VEP0335C)

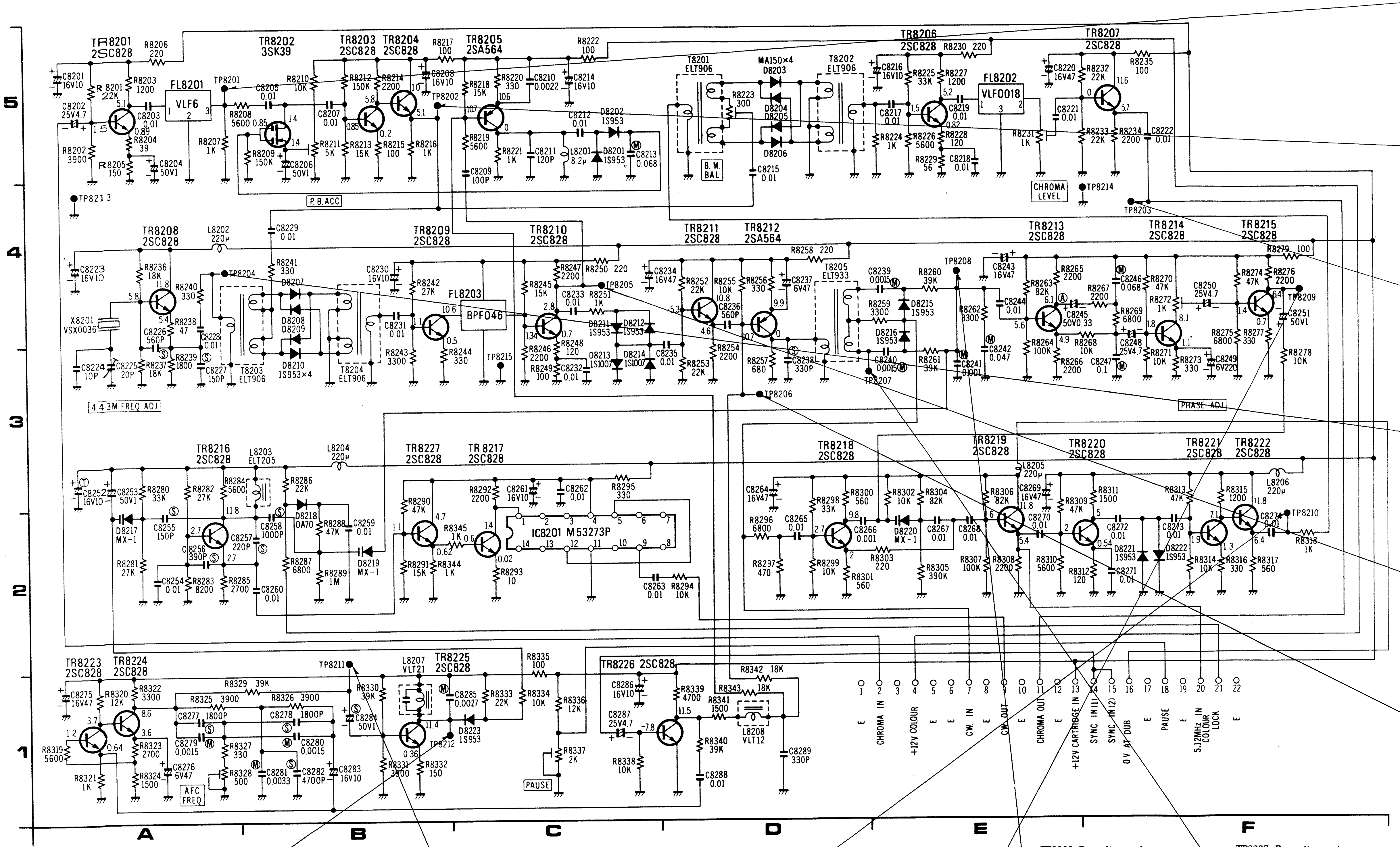
COLOUR PLAYBACK CIRCUIT BOARD (VEP0831E for NV-5130A$^{-E}_{-A}{}_{-B}$)

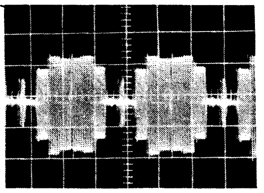

VJB0831
6
5
4
3
2
1
A
B
C
D
E
F
4.43M FREQ. ADJ
CHROMA LEVEL
BM BAL
PB ACC
AFC FREQ
PHASE ADJ
PAUSE
IC8201 M53273P
TR8201 2SC828
TR8202 3SK39
TR8203 2SC828
TR8204 2SC828
TR8205 2SA564
TR8206 2SC828
TR8207 2SC828
TR8208 2SC828
TR8209 2SC828
TR8210 2SC828
TR8211 2SC828
TR8212 2SA564
TR8213 2SC828
TR8214 2SC828
TR8215 2SC828
TR8216 2SC828
TR8217 2SC828
TR8218 2SC828
TR8219 2SC828
TR8220 2SC828
TR8221 2SC828
TR8222 2SC828
TR8223 2SC828
TR8224 2SC828
TR8225 2SC828
TR8226 2SC828
TR8227 2SC828
TR8232 22K
T8201 ELT906
T8202 ELT906
T8203 ELT906
T8204 ELT906
T8205 ELT933
L8203 ELT205
L8207 VLT21
L8208 VLT12
FL8201 VLF6
FL8202 VLF0018
FL8203 BPF046
X8201 4.43M VSX0036
MA150×4
1S953×2
1S953×4
1S953×2
1S1007×2
J1
J2
J3
J4
J5
J6
J7
J8
J9
E
CHROMA IN
+12V COLOUR(1)
+12V COLOUR(2)
E
E
CW. IN
E
CW OUT
E
CHROMA OUT
E
+12V CARTRIDGE IN
SYNC IN(1)
SYNC IN(2)
E
E
PAUSE
E
5.12MHz IN
COLOUR LOCK
E
1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16
17
18
19
20
21
22

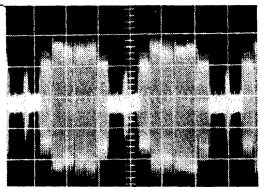
COLOUR PLAYBACK CIRCUIT BLOCK DIAGRAM

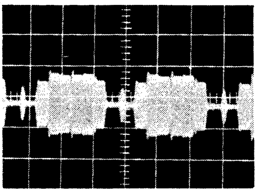

5.81 MHz +△f1 +△f2/4 (Sum)
4.43 MHz +△f2/4 − △f1 (Balance) (△f2/4 = △f1)
Video Amp.
TR8201
Low Pass Filter
FL8201
TP8201
Chrominance Signal Amp.
TR82202 ~ 8204
TP8202
ACC Circuit
Burst Gate
TR8205
Rectifier
D8201, 8202
Balance Modulator (3)
D8203 ~ 8206
Band Pass Filter
FL8202
Chroma Output Amp.
TR8207
TP8203
5.119 MHz +△f2/4
686 KHz +△f1
TP8204
TP8205
TP8208
4.433619 MHz OSC.
X8201. TR8208
Balance Modulator (1)
D8207 ~ 8210
5.119 MHz+△f1
Band Pass Filter
FL8203
Amplitude Limiter Amp.
TR8211
D8211 ~ 8214
Burst Gate
TR8212
Phase Comparator
D8215, 8216
Integrate Circuit
TR8213 ~ 8215
TP8209
TP8206
TP8207
IC8201
APC
1.432 MHz OSC.
TR8216
1.432 MHz +△f2
1 2 3 4 5 6 7
1/4 Count Down
14 13 12 11 10 9 8
Phase Modulator
TR8218 ~ 8222
TP8210
TP8211
358 KHz +△f2/4
AFC Circuit
TR8223 ~ 8225
TP8212
Sync. Delay Circuit for Burst Gate
TR8226
1 Ground
2 Chroma In
3 +12V Colour (1)
4 +12V Colour (2)
5 Ground
6 Ground
7 CW In
8 Ground
9 CW Out
10 Ground
11 Chroma Out
12 Ground
13 +12V Cartridge In
14 Sync In (1)
15 Sync In (2)
16 Ground
17 Ground
18 Pause
19 Ground
20 5.12 MHz IN
21 Colour Lock
22 Ground
TP8213
TP8214
TP8215

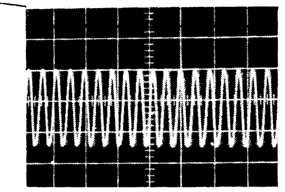
COLOUR PLAYBACK CIRCUIT SECTION (VEP0831E for NV-5130A$\substack{-E\\-A\\-B}$)

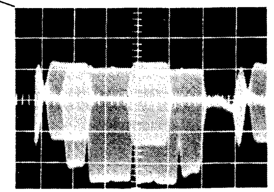

5
4
3
2
1
A
B
C
D
E
F
TR8201 2SC828
TR8202 3SK39
TR8203 2SC828
TR8204 2SC828
TR8205 2SA564
TR8206 2SC828
TR8207 2SC828
TR8208 2SC828
TR8209 2SC828
TR8210 2SC828
TR8211 2SC828
TR8212 2SA564
TR8213 2SC828
TR8214 2SC828
TR8215 2SC828
TR8216 2SC828
TR8227 2SC828
TR 8217 2SC828
TR8218 2SC828
TR8219 2SC828
TR8220 2SC828
TR8221 2SC828
TR8222 2SC828
TR8223 2SC828
TR8224 2SC828
TR8225 2SC828
TR8226 2SC828
FL8201 VLF6
FL8202 VLF0018
FL8203 BPF046
T8201 ELT906
T8202 ELT906
T8203 ELT906
T8204 ELT906
T8205 ELT933
L8203 ELT205
L8207 VLT21
L8208 VLT12
IC8201 M53273P
X8201 VSX0036
MA150×4 D8203
1S953×4 D8210
B.M BAL
P.B ACC
CHROMA LEVEL
4.43M FREQ ADJ
PHASE ADJ
AFC FREQ
PAUSE
TP8201
TP8202
TP8203
TP8204
TP8205
TP8206
TP8207
TP8208
TP8209
TP8210
TP8211
TP8212
TP8213
TP8214
TP8215
1 E
2 CHROMA IN
3
4 +12V COLOUR
5 E
6 E
7 CW. IN
8 E
9 CW. OUT
10 E
11 CHROMA OUT
12 E
13 +12V CARTRIDGE IN
14 SYNC IN(1)
15 SYNC IN(2)
16 0V AT DUB
17 E
18 PAUSE
19 E
20 5.12MHz IN
21 COLOUR LOCK
22 E

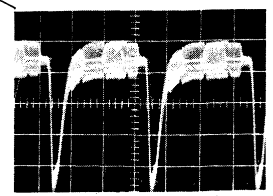

TP8201 Recording mode
20μsec, 0.02V/cm

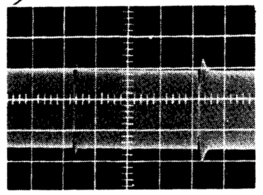

TP8202 Recording mode
20μsec, 0.02V/cm

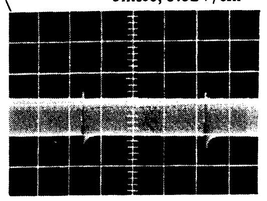

TP8203 Recording mode
20μsec, 0.02V/cm

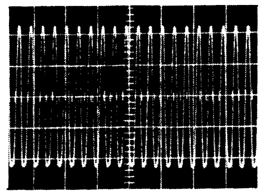

TP8204 Recording mode
0.5μsec, 0.05V/cm

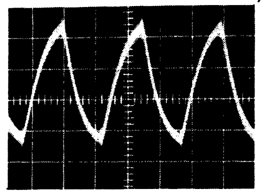

TP8205 Recording mode
10μsec, 0.1V/cm

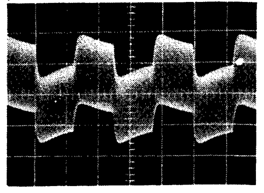

TP8206 Recording mode
20μsec, 0.05V/cm

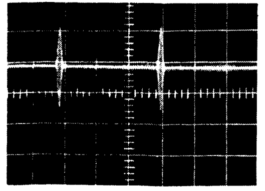

TP8212 Recording mode
5msec, 0.5V/cm


TP8211 Recording mode
5msec, 0.02V/cm

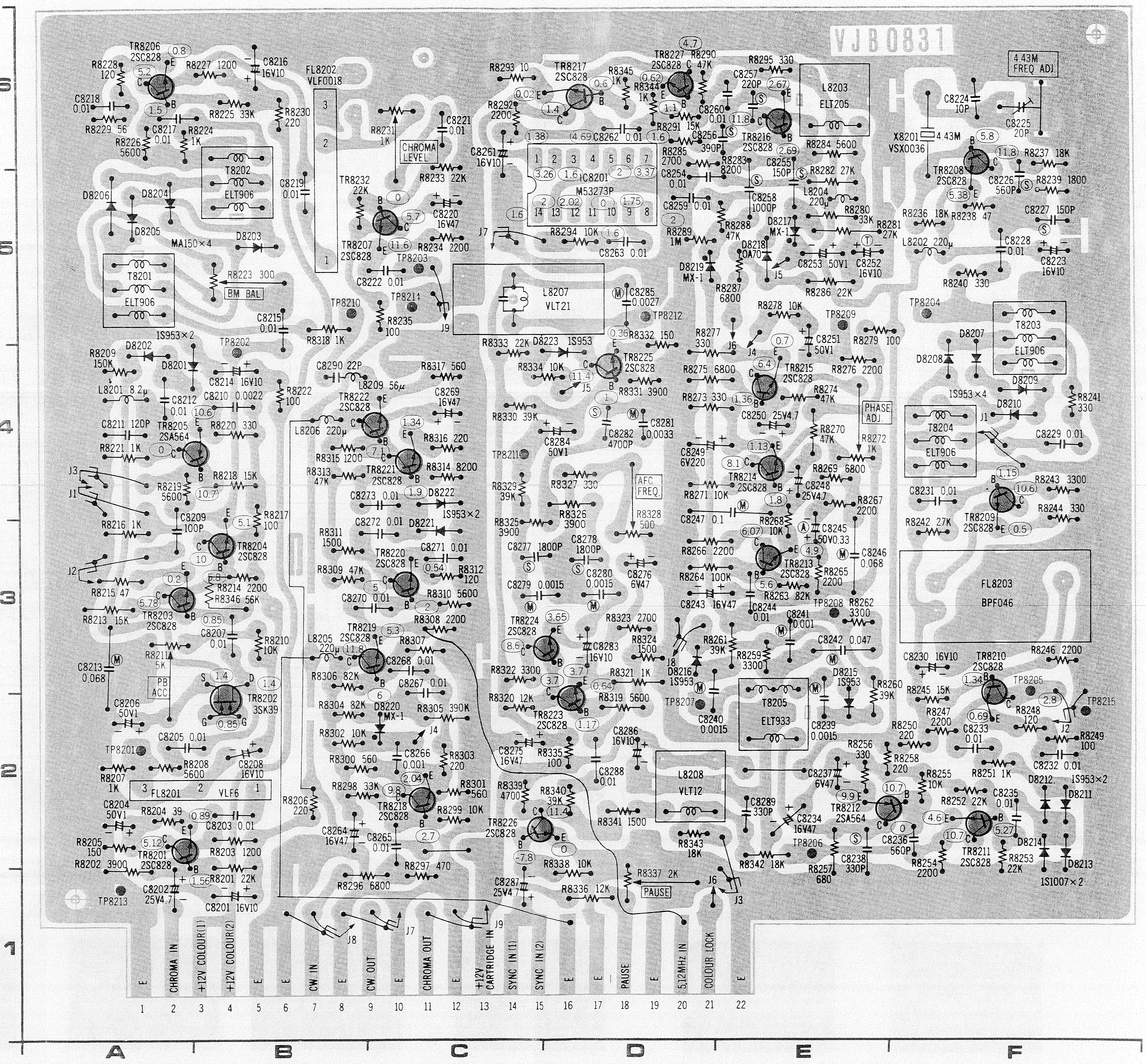

TP8210 Recording mode
0.5μsec, 0.1V/cm


TP8209 Recording mode
50μsec, 0.05V/cm

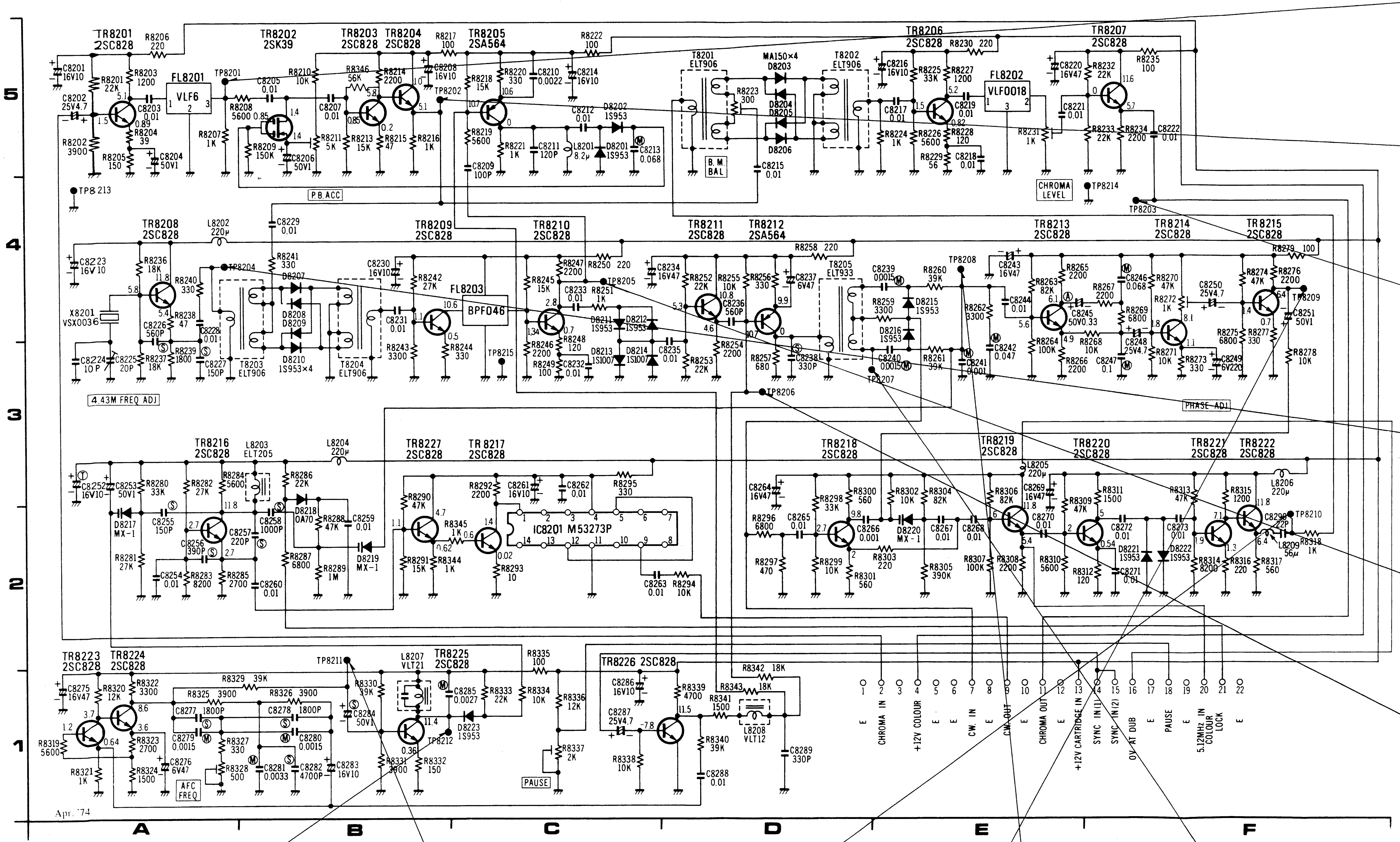

TP8208 Recording mode
50μsec, 0.02V/cm

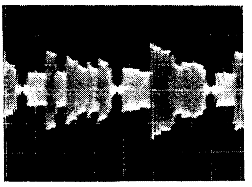

TP8207 Recording mode
20μsec, 0.5V/cm

COLOUR PLAYBACK CIRCUIT BOARD (VEP0831D for NV-5130A-EF)

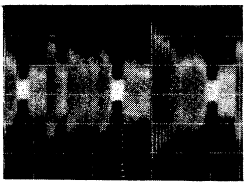

VJB0831
IC8201 M53273P
L8203 ELT205
L8207 VLT21
L8208 VLT12
T8201 ELT906
T8202 ELT906
T8203 ELT906
T8204 ELT906
T8205 ELT933
FL8201 VLF6
FL8202 VLF0018
FL8203 BPF046
X8201 VSX0036 4.43M
4.43M FREQ ADJ
CHROMA LEVEL
BM BAL
PB ACC
AFC FREQ
PHASE ADJ
PAUSE
TR8201 2SC828
TR8202 3SK39
TR8203 2SC828
TR8204 2SC828
TR8205 2SA564
TR8206 2SC828
TR8207 2SC828
TR8208 2SC828
TR8209 2SC828
TR8210 2SC828
TR8211 2SC828
TR8212 2SA564
TR8213 2SC828
TR8214 2SC828
TR8215 2SC828
TR8216 2SC828
TR8217 2SC828
TR8218 2SC828
TR8219 2SC828
TR8220 2SC828
TR8221 2SC828
TR8222 2SC828
TR8223 2SC828
TR8224 2SC828
TR8225 2SC828
TR8226 2SC828
TR8227 2SC828
MA150×4
1S953×2
1S953×4
1S1007×2
E
CHROMA IN
+12V COLOUR(1)
+12V COLOUR(2)
E
E
CW IN
E
CW OUT
E
CHROMA OUT
E
+12V CARTRIDGE IN
SYNC IN(1)
SYNC IN(2)
E
E
PAUSE
E
5.12MHz IN
COLOUR LOCK
E
1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16
17
18
19
20
21
22
A
B
C
D
E
F
1
2
3
4
5
6

COLOUR PLAYBACK CIRCUIT SECTION (VEP0831D for NV-5130A-EF)

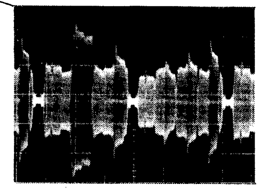

TR8201 2SC828
TR8202 2SK39
TR8203 2SC828
TR8204 2SC828
TR8205 2SA564
TR8206 2SC828
TR8207 2SC828
TR8208 2SC828
TR8209 2SC828
TR8210 2SC828
TR8211 2SC828
TR8212 2SA564
TR8213 2SC828
TR8214 2SC828
TR8215 2SC828
TR8216 2SC828
TR8227 2SC828
TR8217 2SC828
TR8218 2SC828
TR8219 2SC828
TR8220 2SC828
TR8221 2SC828
TR8222 2SC828
TR8223 2SC828
TR8224 2SC828
TR8225 2SC828
TR8226 2SC828
FL8201 VLF6
FL8202 VLF0018
FL8203 BPF046
T8201 ELT906
T8202 ELT906
T8203 ELT906
T8204 ELT906
T8205 ELT933
IC8201 M53273P
X8201 VSX0036
L8203 ELT205
L8207 VLT21
L8208 VLT12
MA150×4
D8210 1S953×4
P.B.ACC
B.M. BAL
CHROMA LEVEL
4.43M FREQ ADJ
PHASE ADJ
AFC FREQ
PAUSE
TP8201
TP8202
TP8203
TP8204
TP8205
TP8206
TP8207
TP8208
TP8209
TP8210
TP8211
TP8212
TP8213
TP8214
TP8215
E
CHROMA IN
+12V COLOUR
E
E
CW. IN
E
CW. OUT
E
CHROMA OUT
E
+12V CARTRIDGE IN
SYNC IN(1)
SYNC IN(2)
OV AT DUB
E
PAUSE
E
5.12MHz IN
COLOUR LOCK
E
5
4
3
2
1
A
B
C
D
E
F
Apr. '74



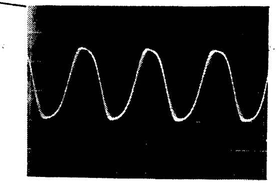
TP8201 Recording mode
0.2 V/20μsec. div.



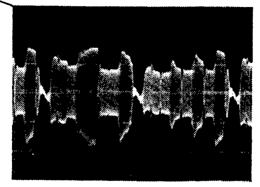
TP8202 Recording mode
0.2 V/20μsec. div.



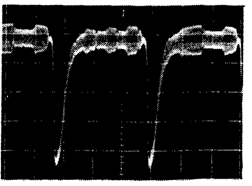
TP8203 Recording mode
0.1 V/20μsec. div.



TP8204 Recording mode
0.5 V/0.1μsec. div.

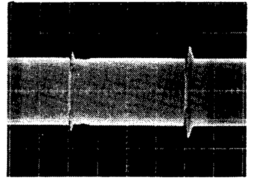


TP8205 Recording mode
1.0 V/20μsec. div.

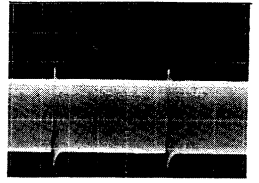


TP8206 Recording mode
0.5 V/20μsec. div.

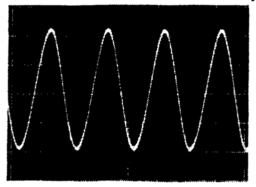
TP8212 Recording mode
5.0 V/5 msec. div.



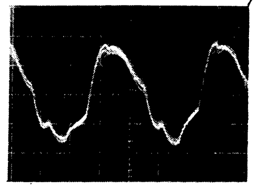
TP8211 Recording mode
0.1 V/5 msec. div.



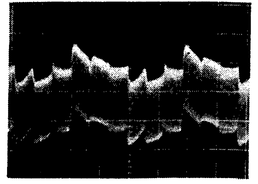
TP8210 Recording mode
2.0 V/0.1μsec. div.



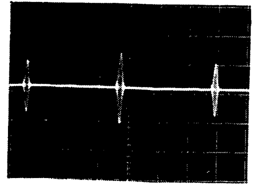
TP8209 Recording mode
1.0 V/0.1 msec. div.



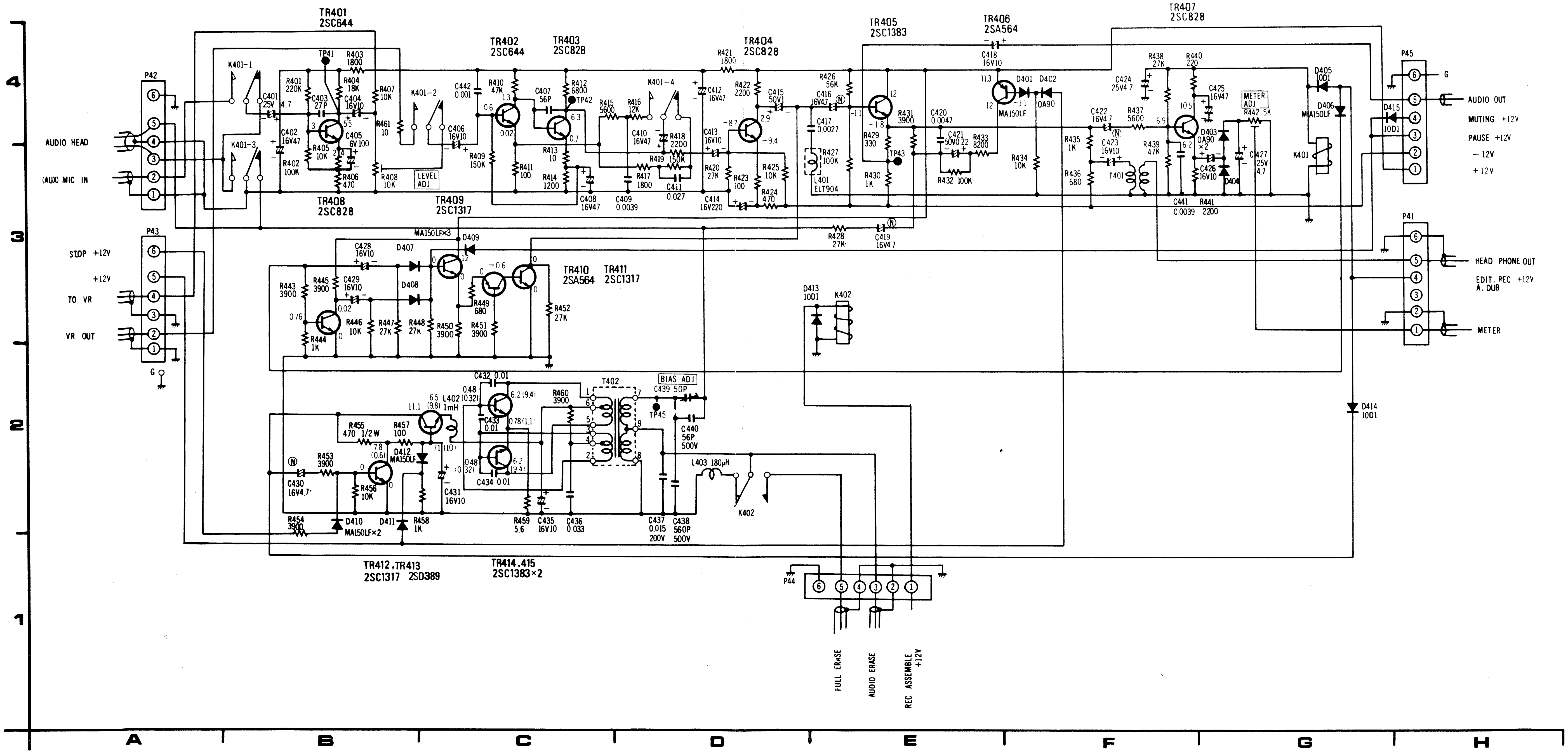
TP8208 Recording mode
0.2 V/0.1 msec. div.



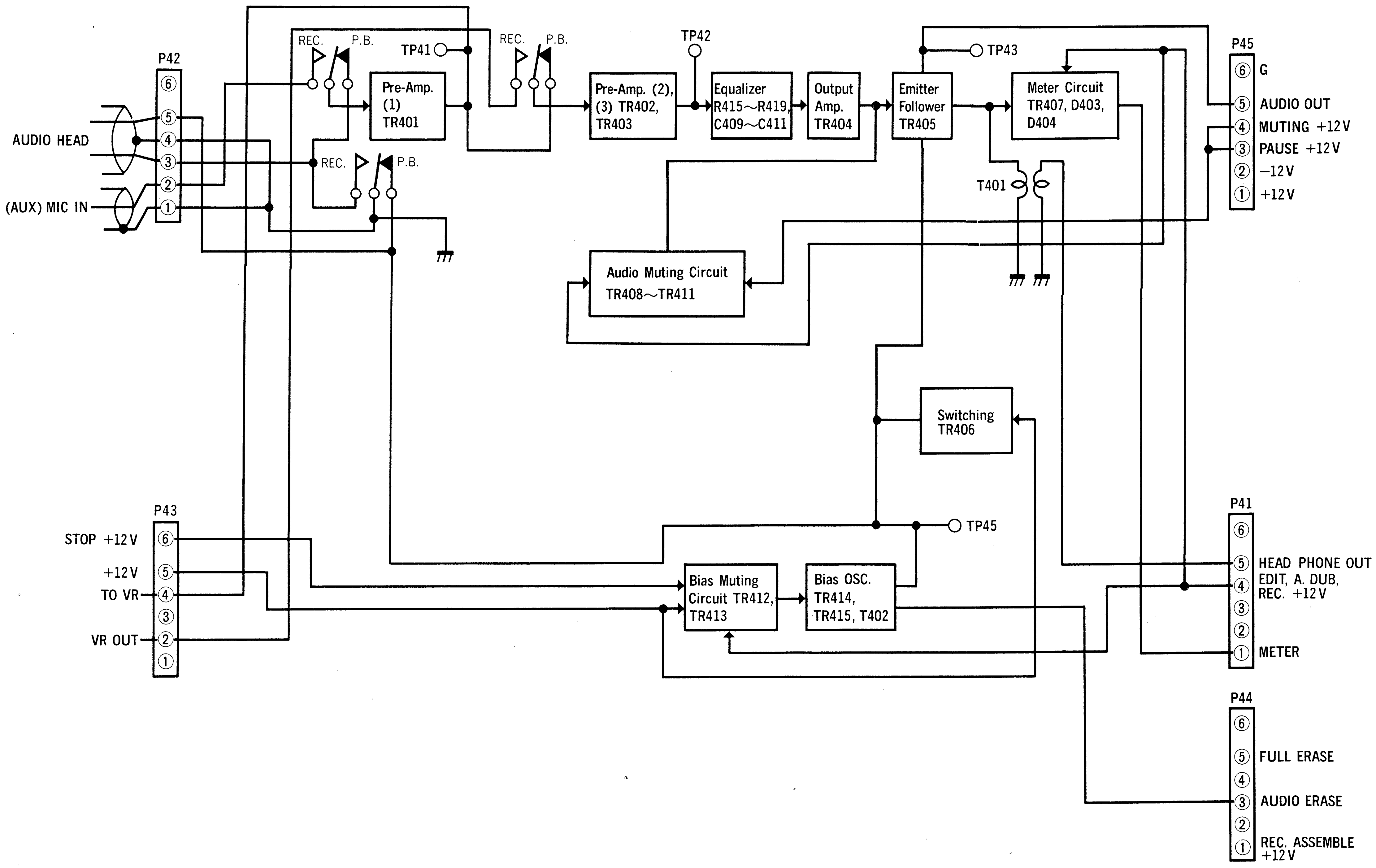
TP8207 Recording mode
5 V/20μsec. div.



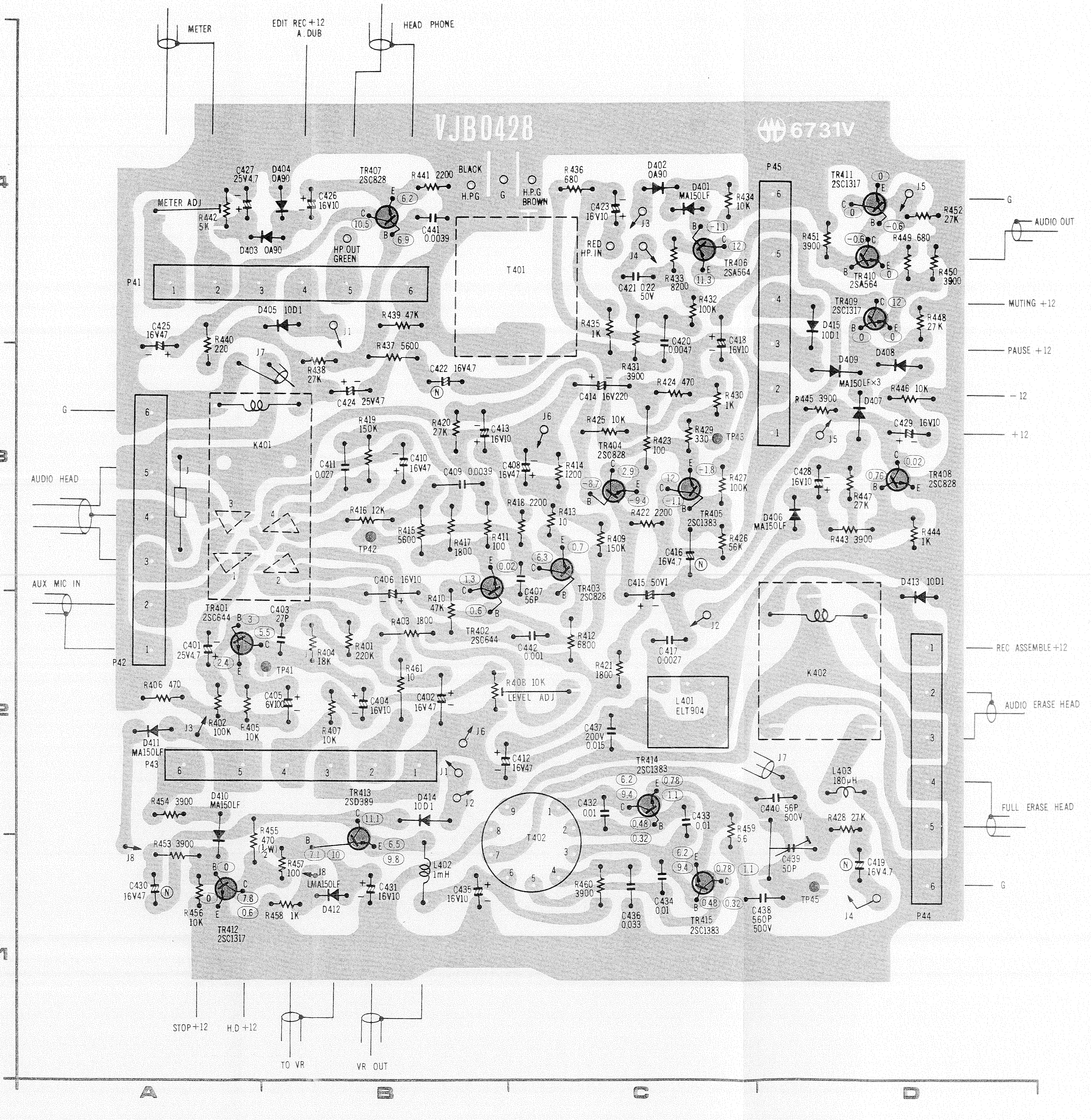
AUDIO CIRCUIT SECTION (VEP0428A)


TR401 2SC644
TR402 2SC644
TR403 2SC828
TR404 2SC828
TR405 2SC1383
TR406 2SA564
TR407 2SC828
TR408 2SC828
TR409 2SC1317
TR410 2SA564
TR411 2SC1317
TR412, TR413 2SC1317 2SD389
TR414, 415 2SC1383×2
P41
P42
P43
P44
P45
AUDIO HEAD
(AUX) MIC IN
STOP +12V
+12V
TO VR
VR OUT
G
AUDIO OUT
MUTING +12V
PAUSE +12V
− 12V
+ 12V
HEAD PHONE OUT
EDIT. REC +12V
A. DUB
METER
K401-1
K401-2
K401-3
K401-4
K401
K402
TP41
TP42
TP43
TP45
LEVEL ADJ
METER ADJ
BIAS ADJ
T401
T402
L401 ELT904
L402 1mH
L403 180μH
D401
D402 OA90
D403 OA90 ×2
D404
D405 10D1
D406 MA150LF
D407
D408
D409 MA150LF×3
D410 MA150LF×2
D411
D412 MA150LF
D413 10D1
D414 10D1
D415 10D1
R401 220K
R402 100K
R403 1800
R404 18K
R405 10K
R406 470
R407 10K
R408 10K
R409 150K
R410 47K
R411 100
R412 6800
R413 10
R414 1200
R415 5600
R416 12K
R417 1800
R418 2200
R419 150K
R420 27K
R421 1800
R422 2200
R423 100
R424 470
R425 10K
R426 56K
R427 100K
R428 27K
R429 330
R430 1K
R431 3900
R432 100K
R433 8200
R434 10K
R435 1K
R436 680
R437 5600
R438 27K
R439 47K
R440 220
R441 2200
R442 5K
R443 3900
R444 1K
R445 3900
R446 10K
R447 27K
R448 27K
R449 680
R450 3900
R451 3900
R452 27K
R453 3900
R454 3900
R455 470 1/2W
R456 10K
R457 100
R458 1K
R459 5.6
R460 3900
R461 10
C401 25V 4.7
C402 16V47
C403 27P
C404 16V10
C405 6V 100
C406 16V10
C407 56P
C408 16V47
C409 0.0039
C410 16V47
C411 0.027
C412 16V47
C413 16V10
C414 16V220
C415 50V1
C416 16V47
C417 0.0027
C418 16V10
C419 16V4.7
C420 0.0047
C421 50V0.22
C422 16V4.7
C423 16V10
C424 25V4.7
C425 16V47
C426 16V10
C427 25V 4.7
C428 16V10
C429 16V10
C430 16V4.7
C431 16V10
C432 0.01
C433 0.01
C434 0.01
C435 16V10
C436 0.033
C437 0.015 200V
C438 560P 500V
C439 50P
C440 56P 500V
C441 0.0039
C442 0.001
FULL ERASE
AUDIO ERASE
REC ASSEMBLE +12V
A
B
C
D
E
F
G
H
1
2
3
4

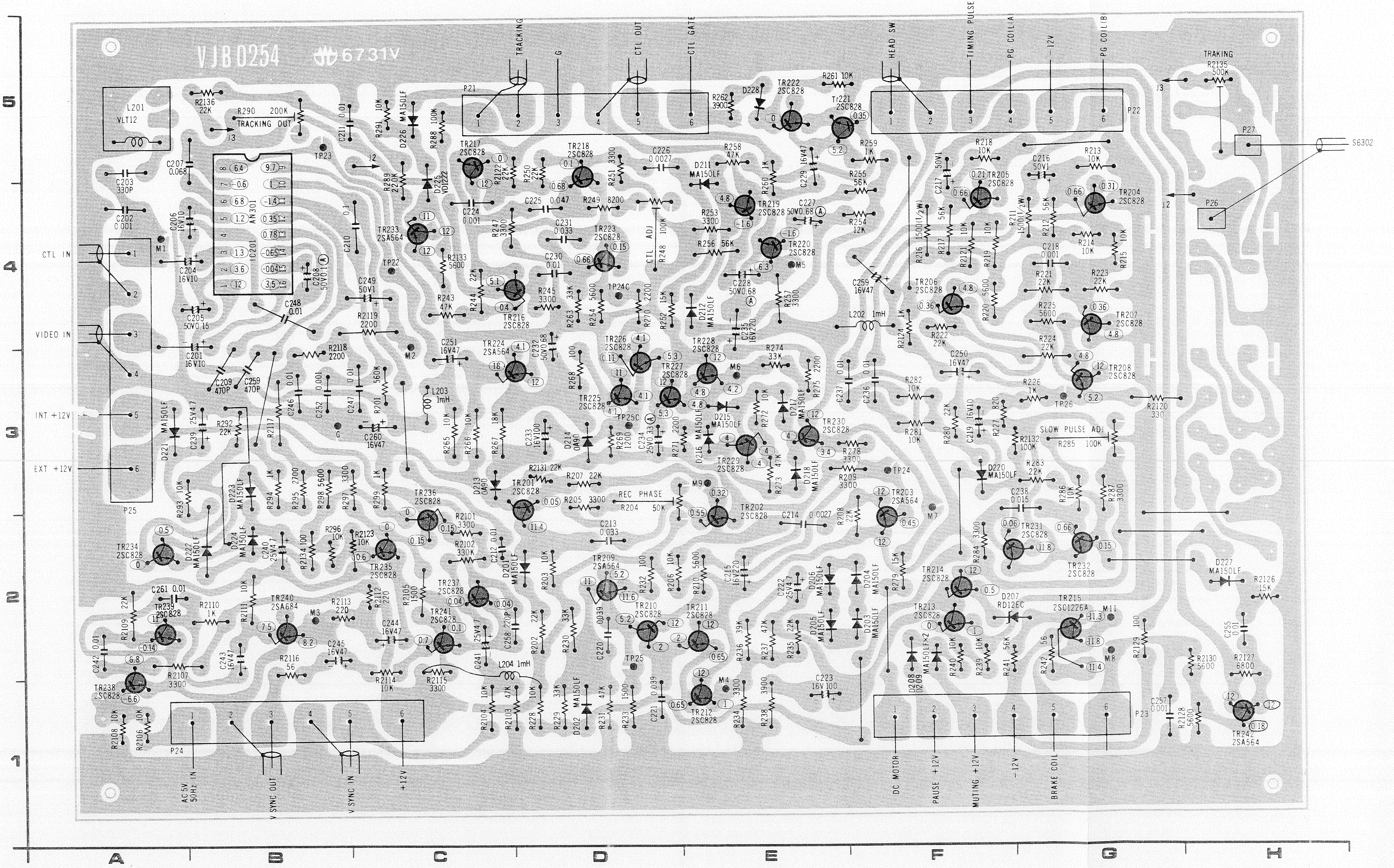
AUDIO CIRCUIT BLOCK DIAGRAM


P42
⑥
⑤
④
③
②
①
AUDIO HEAD
(AUX) MIC IN
REC.
P.B.
TP41
REC.
P.B.
REC.
P.B.
Pre-Amp. (1) TR401
TP42
Pre-Amp. (2), (3) TR402, TR403
Equalizer R415~R419, C409~C411
Output Amp. TR404
Emitter Follower TR405
TP43
Meter Circuit TR407, D403, D404
T401
Audio Muting Circuit TR408~TR411
Switching TR406
P45
⑥ G
⑤ AUDIO OUT
④ MUTING +12V
③ PAUSE +12V
② −12V
① +12V
P43
STOP +12V ⑥
+12V ⑤
TO VR ④
③
VR OUT ②
①
TP45
Bias Muting Circuit TR412, TR413
Bias OSC. TR414, TR415, T402
P41
⑥
⑤ HEAD PHONE OUT
④ EDIT, A. DUB, REC. +12V
③
②
① METER
P44
⑥
⑤ FULL ERASE
④
③ AUDIO ERASE
②
① REC. ASSEMBLE +12V

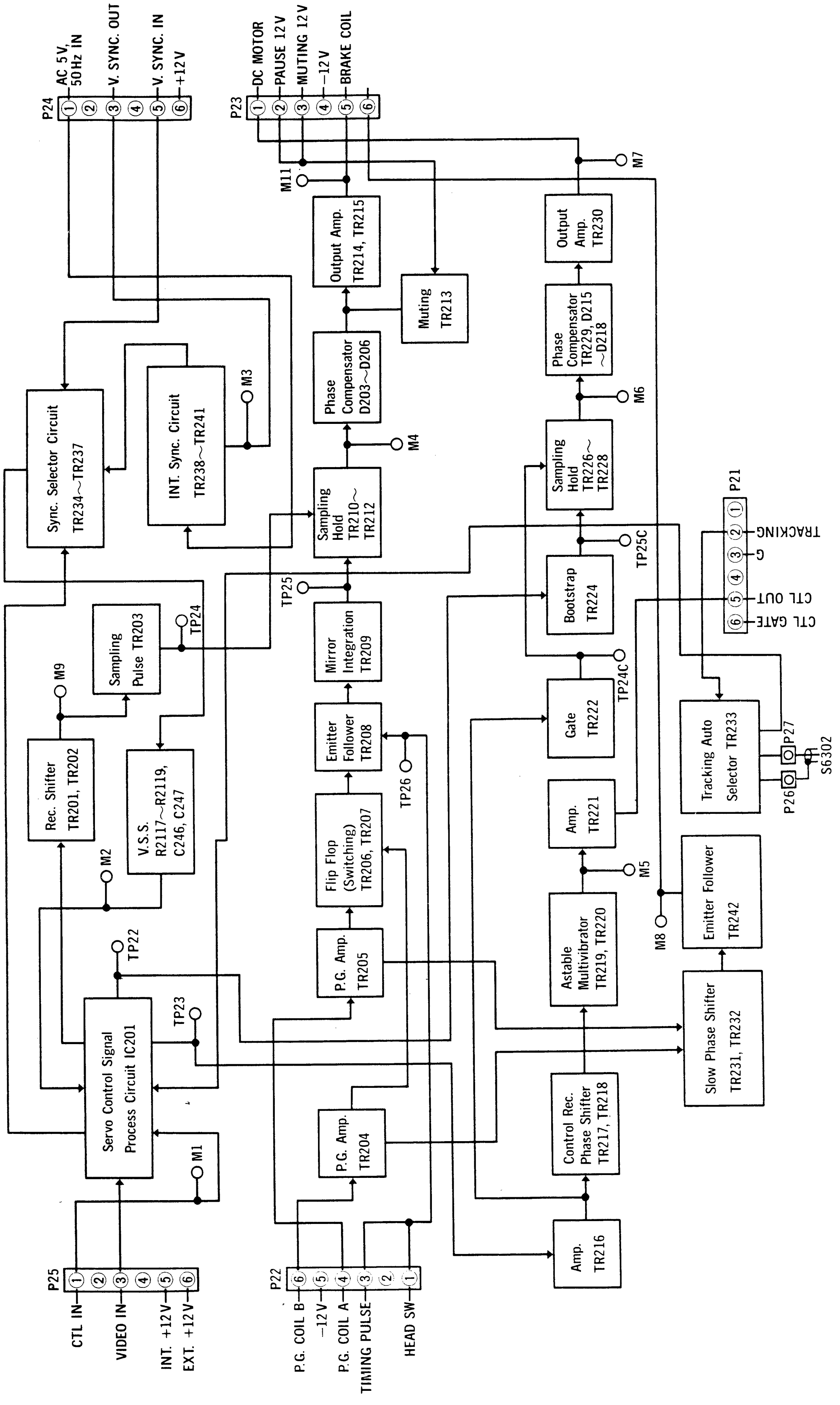
AUDIO CIRCUIT BOARD (VEP0428A)


METER
EDIT REC +12
A.DUB
HEAD PHONE
VJB0428
6731V
4
3
2
1
A
B
C
D
METER ADJ
R442 5K
C427 25V4.7
D404 OA90
C426 16V10
D403 OA90
TR407 2SC828
R441 2200
C441 0.0039
HP.OUT GREEN
BLACK H.PG
G
H.P.G BROWN
T401
RED HP.IN
J3
J4
R436 680
C423 16V10
D402 OA90
D401 MA150LF
R434 10K
TR406 2SA564
R433 8200
C421 0.22 50V
R432 100K
P41
P45
TR411 2SC1317
J5
R452 27K
R451 3900
R449 680
TR410 2SA564
R450 3900
TR409 2SC1317
R448 27K
D415 10D1
D409
D408
MA150LF×3
R446 10K
D407
R445 3900
C429 16V10
C428 16V10
R447 27K
TR408 2SC828
D406 MA150LF
R443 3900
R444 1K
D405 10D1
C425 16V47
R440 220
J1
R439 47K
R437 5600
R438 27K
J7
C424 25V47
C422 16V4.7
R435 1K
C420 0.0047
C418 16V10
R431 3900
C414 16V220
R424 470
R430 1K
K401
R419 150K
C411 0.027
C410 16V47
R420 27K
C413 16V10
J6
C409 0.0039
C408 16V47
R414 1200
R425 10K
TR404 2SC828
R423 100
R429 330
TP43
R427 100K
TR405 2SC1383
R416 12K
R415 5600
TP42
R417 1800
R411 100
R418 2200
R413 10
R422 2200
R409 150K
R426 56K
C416 16V4.7
C406 16V10
C407 56P
TR403 2SC828
C415 50V1
R410 47K
TR402 2SC644
R403 1800
C442 0.001
R412 6800
J2
C417 0.0027
R421 1800
D413 10D1
K402
G
AUDIO HEAD
AUX MIC IN
P42
TR401 2SC644
C403 27P
C401 25V4.7
R404 18K
R401 220K
TP41
R461 10
R408 10K LEVEL ADJ
L401 ELT904
R406 470
C405 6V100
C404 16V10
C402 16V47
C437 200V 0.015
R402 100K
R405 10K
R407 10K
D411 MA150LF
P43
C412 16V47
J1
J2
TR414 2SC1383
L403 180μH
C440 56P 500V
R428 27K
R454 3900
D410 MA150LF
TR413 2SD389
D414 10D1
T402
C432 0.01
C433 0.01
R459 56
R453 3900
R455 470 (1/2W)
R457 100
J8
LMA150LF
D412
L402 1mH
C431 16V10
C435 16V10
R460 3900
C434 0.01
C436 0.033
TR415 2SC1383
C439 50P
C438 560P 500V
TP45
C419 16V4.7
J4
P44
C430 16V47
R456 10K
TR412 2SC1317
R458 1K
G
AUDIO OUT
MUTING +12
PAUSE +12
−12
+12
REC ASSEMBLE +12
AUDIO ERASE HEAD
FULL ERASE HEAD
G
STOP +12
H.D +12
TO VR
VR OUT

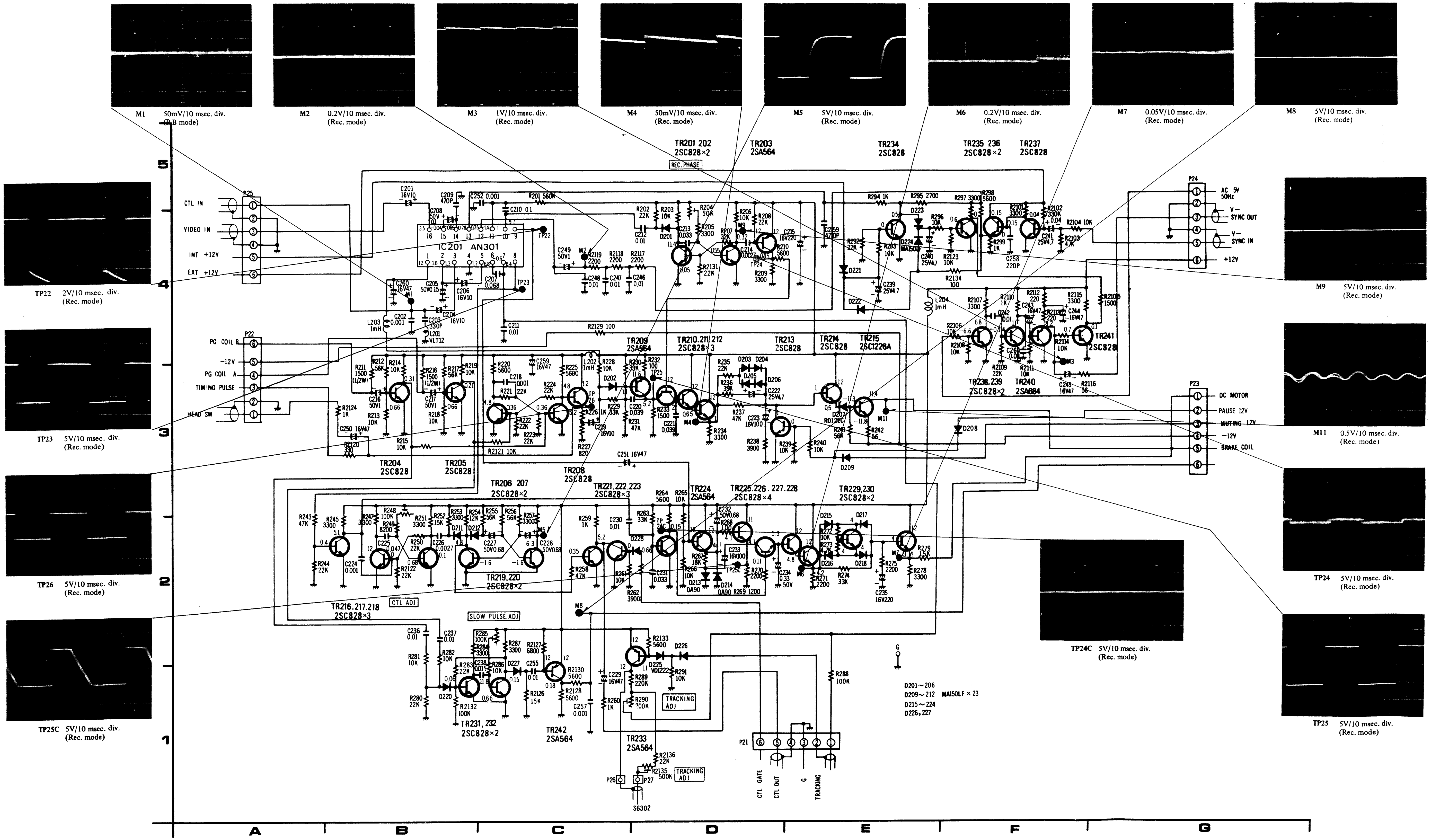
SERVO CONTROL CIRCUIT BOARD (VEP0254C)


VJB0254
6731V
TRACKING
G
CTL OUT
CTL GATE
HEAD SW
TIMING PULSE
PG COIL(A)
-12V
PG COIL(B)
TRAKING
R2135 500K
S6302
P21
P22
P23
P24
P25
P26
P27
J2
J3
L201 VLT12
R2136 22K
R290 200K TRACKING OUT
IC201 AN301
CTL IN
VIDEO IN
INT +12V
EXT +12V
CTL ADJ
REC PHASE
SLOW PULSE ADJ
L202 1mH
L203 1mH
L204 1mH
TP22
TP23
TP24
TP24C
TP25
TP25C
TP26
M1
M2
M3
M4
M5
M6
M7
M8
M9
M11
AC5V 50Hz IN
V SYNC OUT
V SYNC IN
+12V
DC MOTOR
PAUSE +12V
MUTING +12V
-12V
BRAKE COIL
TR201 2SC828
TR202 2SC828
TR203 2SA564
TR204 2SC828
TR205 2SC828
TR206 2SC828
TR207 2SC828
TR208 2SC828
TR209 2SA564
TR210 2SC828
TR211 2SC828
TR212 2SC828
TR213 2SC828
TR214 2SC828
TR215 2SC1226A
TR216 2SC828
TR217 2SC828
TR218 2SC828
TR219 2SC828
TR220 2SC828
Tr221 2SC828
TR222 2SC828
TR223 2SC828
TR224 2SA564
TR225 2SC828
TR226 2SC828
TR227 2SC828
TR228 2SC828
TR229 2SC828
TR230 2SC828
TR231 2SC828
TR232 2SC828
TR233 2SA564
TR234 2SC828
TR235 2SC828
TR236 2SC828
TR237 2SC828
TR238 2SC828
TR239 2SC828
TR240 2SA684
TR241 2SC828
TR242 2SA564
D207 RD12EC
D208 D209 MA150LF×2
D213 OA90
D214 OA90
D225 VD1222
5
4
3
2
1
A
B
C
D
E
F
G
H

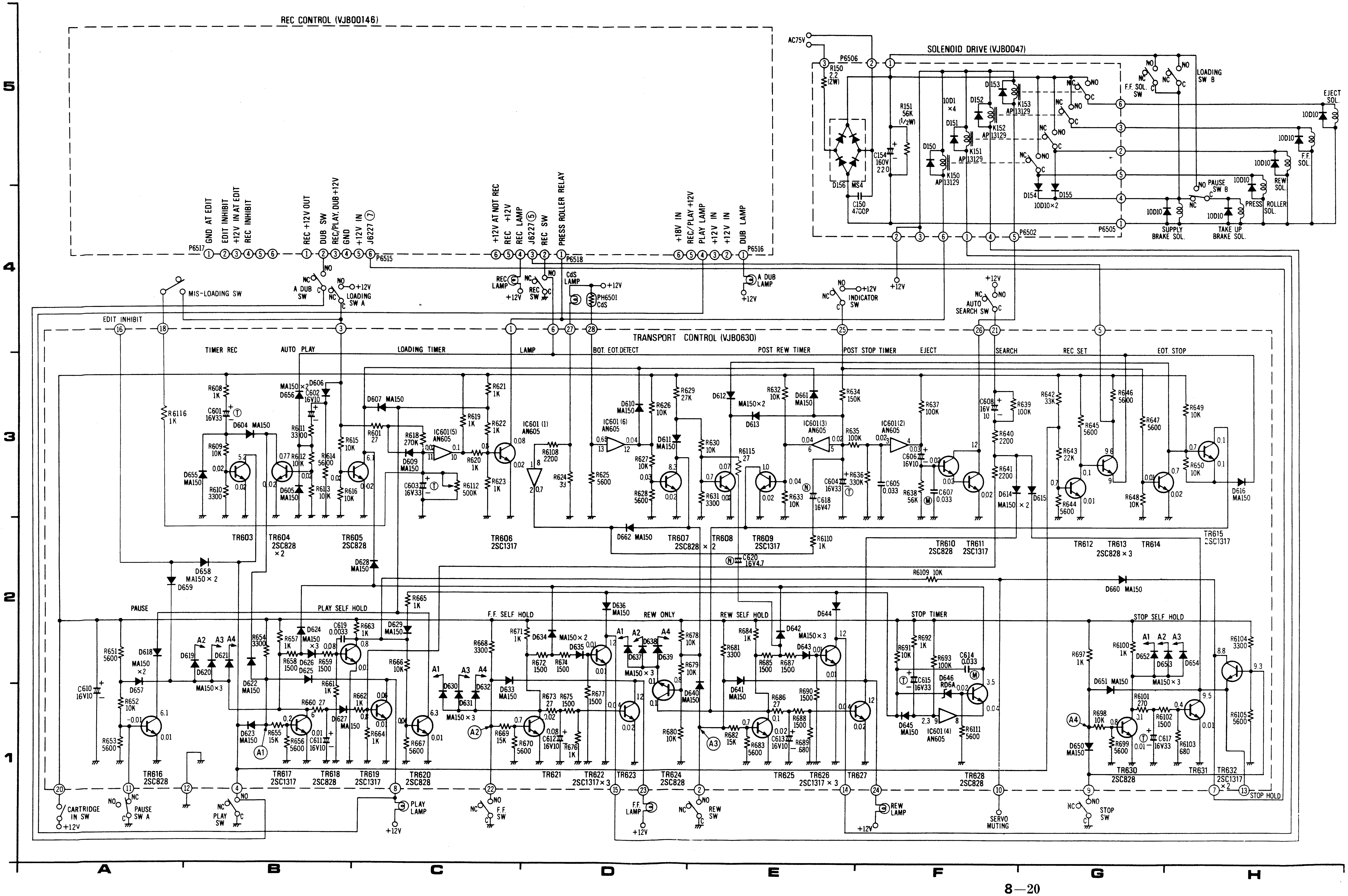
SERVO CONTROL CIRCUIT BLOCK DIAGRAM


P24
AC 5V, 50 Hz IN
V. SYNC. OUT
V. SYNC. IN
+12V
P23
DC MOTOR
PAUSE 12 V
MUTING 12 V
−12 V
BRAKE COIL
M11
M7
Output Amp. TR214, TR215
Output Amp. TR230
Muting TR213
Phase Compensator D203~D206
Phase Compensator TR229, D215 ~D218
M3
M4
M6
Sync. Selector Circuit TR234~TR237
INT. Sync. Circuit TR238~TR241
Sampling Hold TR210~ TR212
Sampling Hold TR226~ TR228
P21
TRACKING
G
CTL OUT
CTL GATE
TP25C
TP25
Bootstrap TR224
Sampling Pulse TR203
TP24
Mirror Integration TR209
M9
TP24C
Gate TR222
Emitter Follower TR208
Rec. Shifter TR201, TR202
V.S.S. R2117~R2119, C246, C247
TP26
Tracking Auto Selector TR233
P27
S6302
P26
Amp. TR221
M2
Flip Flop (Switching) TR206, TR207
M5
M8
Emitter Follower TR242
TP22
Astable Multivibrator TR219, TR220
P.G. Amp. TR205
TP23
Slow Phase Shifter TR231, TR232
Servo Control Signal Process Circuit IC201
Control Rec. Phase Shifter TR217, TR218
P.G. Amp. TR204
M1
Amp. TR216
P25
CTL IN
VIDEO IN
INT. +12V
EXT. +12V
P22
P.G. COIL B
−12V
P.G. COIL A
TIMING PULSE
HEAD SW

SERVO CONTROL CIRCUIT SECTION (VEP0254C)

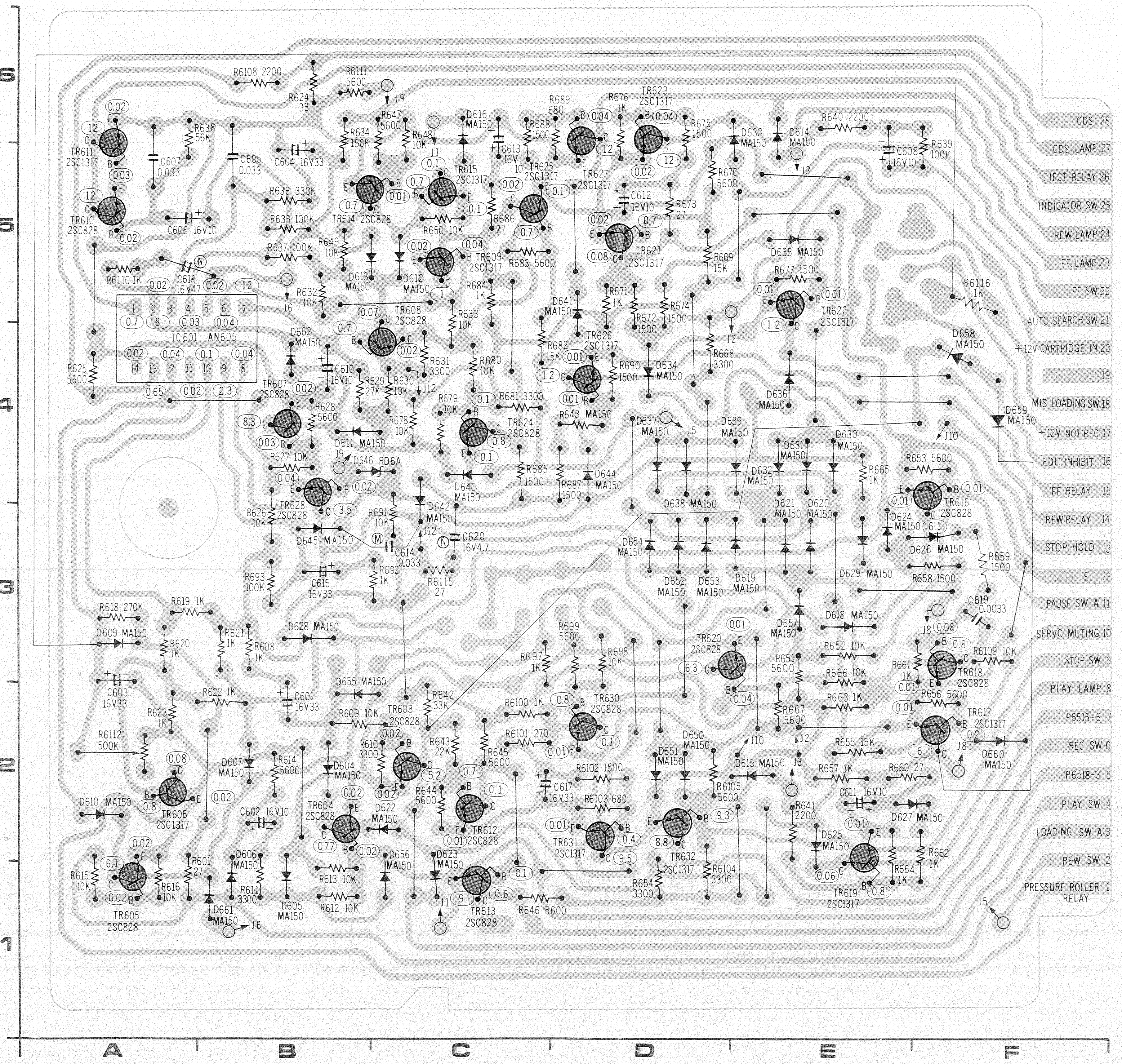

M1 50mV/10 msec. div. (P.B mode)
M2 0.2V/10 msec. div. (Rec. mode)
M3 1V/10 msec. div. (Rec. mode)
M4 50mV/10 msec. div. (Rec. mode)
M5 5V/10 msec. div. (Rec. mode)
M6 0.2V/10 msec. div. (Rec. mode)
M7 0.05V/10 msec. div. (Rec. mode)
M8 5V/10 msec. div. (Rec. mode)
M9 5V/10 msec. div. (Rec. mode)
M11 0.5V/10 msec. div. (Rec. mode)
TP22 2V/10 msec. div. (Rec. mode)
TP23 5V/10 msec. div. (Rec. mode)
TP26 5V/10 msec. div. (Rec. mode)
TP25C 5V/10 msec. div. (Rec. mode)
TP24 5V/10 msec. div. (Rec. mode)
TP24C 5V/10 msec. div. (Rec. mode)
TP25 5V/10 msec. div. (Rec. mode)
TR201 202 2SC828×2
REC. PHASE
TR203 2SA564
TR234 2SC828
TR235 236 2SC828×2
TR237 2SC828
IC201 AN301
P25
CTL IN
VIDEO IN
INT +12V
EXT +12V
P22
PG COIL B
-12V
PG COIL A
TIMING PULSE
HEAD SW
P24
AC 5V 50Hz
V-SYNC OUT
V-SYNC IN
+12V
P23
DC MOTOR
PAUSE 12V
MUTING 12V
-12V
BRAKE COIL
TR204 2SC828
TR205 2SC828
TR208 2SC828
TR209 2SA564
TR210.211.212 2SC828×3
TR213 2SC828
TR214 2SC828
TR215 2SC1226A
TR238.239 2SC828×2
TR240 2SA684
TR241 2SC828
TR206 207 2SC828×2
TR221.222.223 2SC828×3
TR224 2SA564
TR225.226.227.228 2SC828×4
TR229.230 2SC828×2
TR216.217.218 2SC828×3
CTL ADJ
TR219.220 2SC828×2
SLOW PULSE ADJ
TR231, 232 2SC828×2
TR242 2SA564
TR233 2SA564
TRACKING ADJ
S6302
P26
P27
P21
CTL GATE
CTL OUT
G
TRACKING
D201~206
D209~212 MA150LF × 23
D215~224
D226, 227
5
4
3
2
1
A
B
C
D
E
F
G

TRANSPORT CONTROL (VEP0630E)/SOLENOID DRIVE (VEP0047A) CIRCUIT SECTION



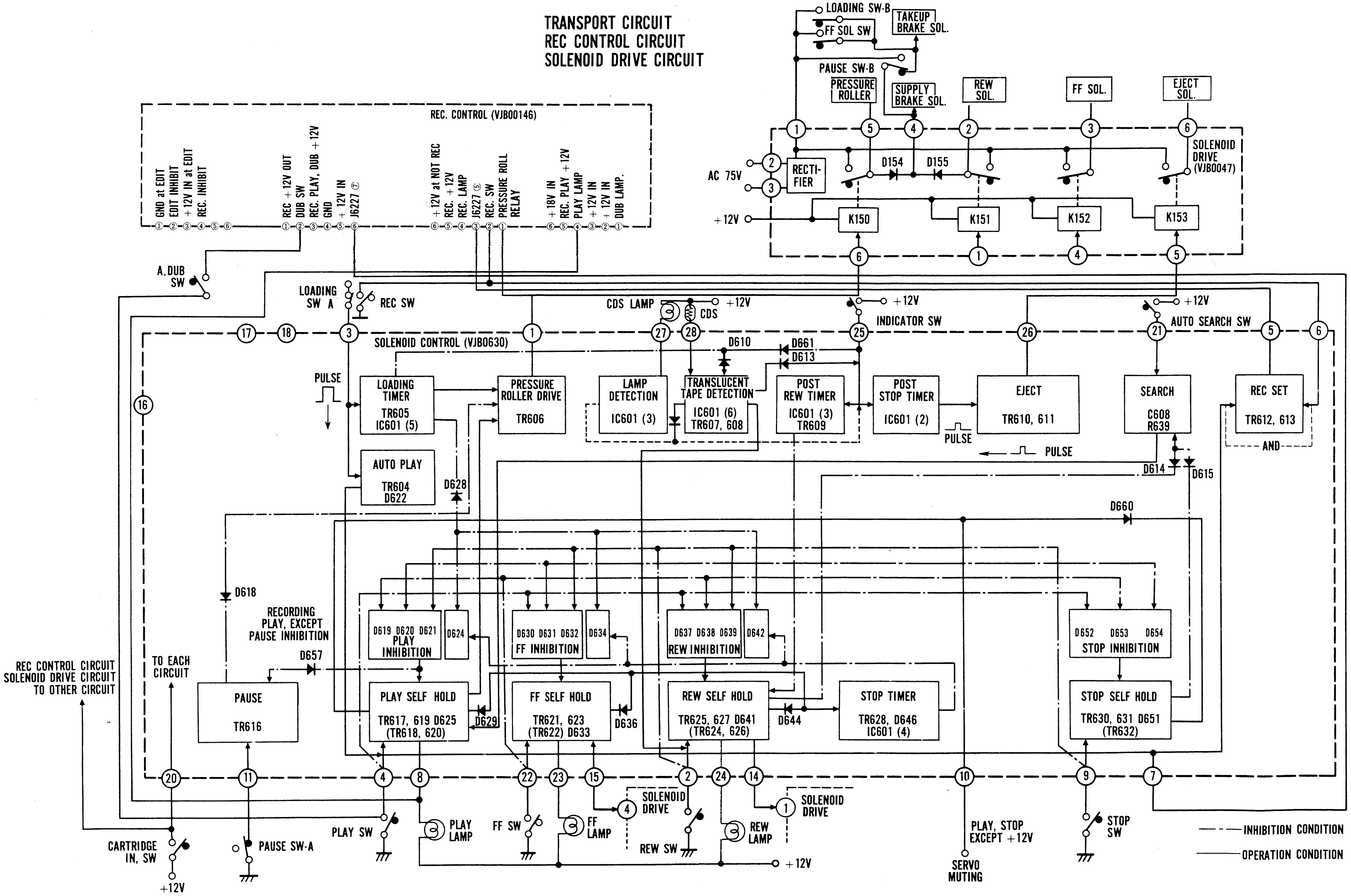
REC CONTROL (VJB00146)
SOLENOID DRIVE (VJB0047)
TRANSPORT CONTROL (VJB0630)
AC75V
P6506
P6505
P6502
P6515
P6516
P6517
P6518
GND AT EDIT
EDIT INHIBIT
+12V IN AT EDIT
REC INHIBIT
REC +12V OUT
DUB SW
REC/PLAY, DUB +12V
GND
+12V IN
J6227 ⑦
+12V AT NOT REC
REC +12V
REC LAMP
J6227 ⑤
REC SW
PRESS ROLLER RELAY
+18V IN
REC/PLAY +12V
PLAY LAMP
+12V IN
+12V IN
DUB LAMP
MIS-LOADING SW
A DUB SW
LOADING SW A
REC LAMP
REC SW
CdS LAMP
PH6501 CdS
A DUB LAMP
INDICATOR SW
AUTO SEARCH SW
F.F. SOL. SW
LOADING SW B
EJECT SOL.
F.F SOL.
REW SOL.
PAUSE SW B
PRESS ROLLER SOL.
SUPPLY BRAKE SOL.
TAKE UP BRAKE SOL.
K150 AP13129
K151 AP13129
K152 AP13129
K153 AP13129
D156 MS4
C150 4700P
R150 2.2 (2W)
R151 56K (1/2W)
C154 160V 220
10D1 ×4
D154 D155 10D10×2
EDIT INHIBIT
TIMER REC
AUTO PLAY
LOADING TIMER
LAMP
BOT. EOT.DETECT
POST REW TIMER
POST STOP TIMER
EJECT
SEARCH
REC SET
EOT. STOP
IC601 (1) AN605
IC601(5) AN605
IC601 (6) AN605
IC601(3) AN605
IC601(2) AN605
IC601 (4) AN605
TR603
TR604 2SC828 ×2
TR605 2SC828
TR606 2SC1317
TR607 2SC828 × 2
TR608
TR609 2SC1317
TR610 2SC828
TR611 2SC1317
TR612
TR613 2SC828 × 3
TR614
TR615 2SC1317
PAUSE
PLAY SELF HOLD
F.F. SELF HOLD
REW ONLY
REW SELF HOLD
STOP TIMER
STOP SELF HOLD
TR616 2SC828
TR617 2SC1317
TR618 2SC828
TR619 2SC1317
TR620 2SC828
TR621
TR622 2SC1317 × 3
TR623
TR624 2SC828
TR625
TR626 2SC1317 × 3
TR627
TR628 2SC828
TR630 2SC828
TR631
TR632 2SC1317 ×2
CARTRIDGE IN SW
PAUSE SW A
PLAY SW
PLAY LAMP
F.F SW
F.F LAMP
REW SW
REW LAMP
SERVO MUTING
STOP SW
STOP HOLD
+12V
A B C D E F G H
1 2 3 4 5

TRANSPORT CONTROL CIRCUIT BOARD (VEP0630E)

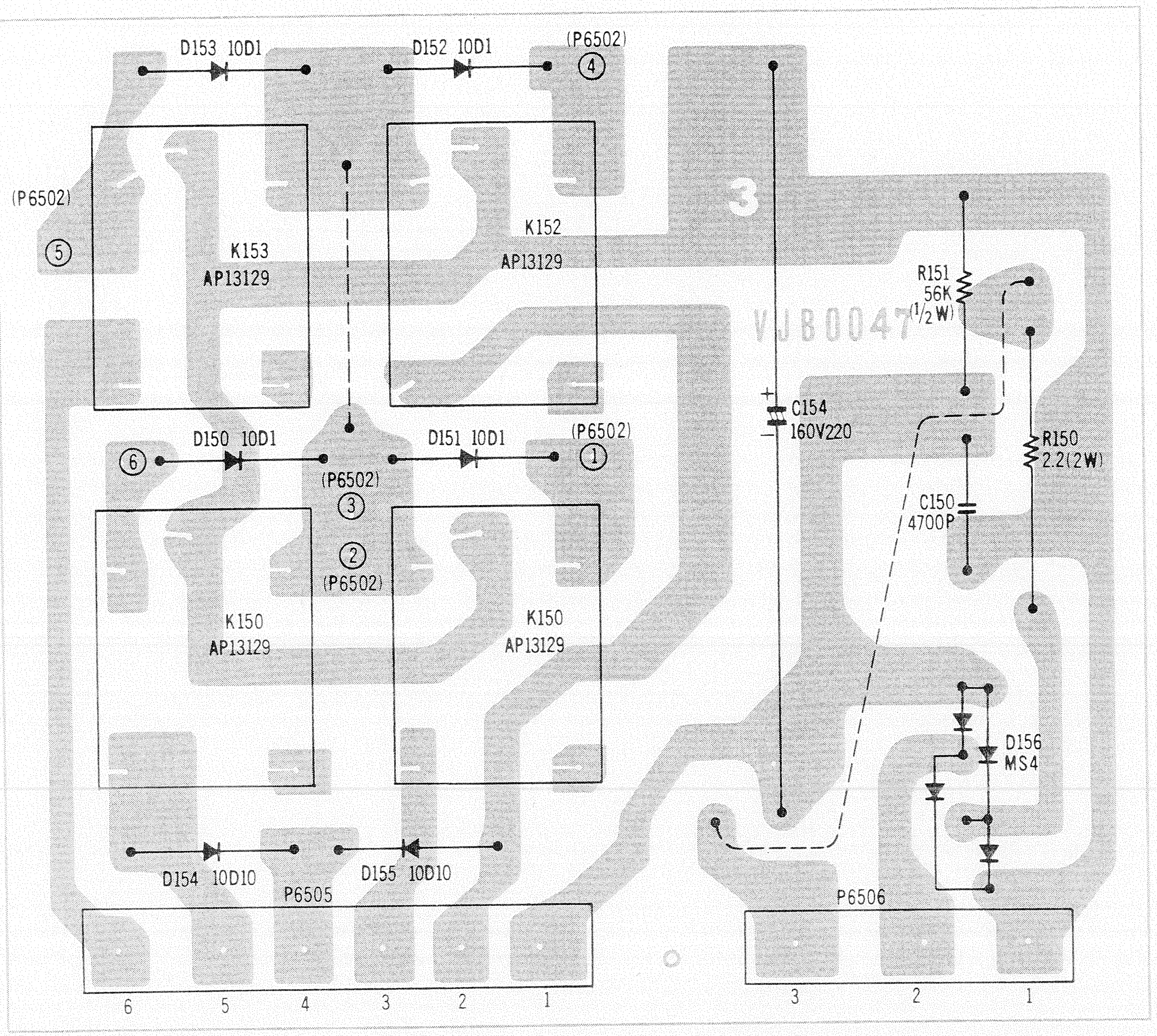


6
5
4
3
2
1
A
B
C
D
E
F
CDS 28
CDS LAMP 27
EJECT RELAY 26
INDICATOR SW 25
REW LAMP 24
FF. LAMP 23
FF. SW 22
AUTO SEARCH SW 21
+12V CARTRIDGE IN 20
19
MIS LOADING SW 18
+12V NOT REC 17
EDIT INHIBIT 16
FF RELAY 15
REW RELAY 14
STOP HOLD 13
E 12
PAUSE SW A 11
SERVO MUTING 10
STOP SW 9
PLAY LAMP 8
P6515-6 7
REC SW 6
P6518-3 5
PLAY SW 4
LOADING SW-A 3
REW SW 2
PRESSURE ROLLER 1 RELAY
IC601 AN605
TR611 2SC1317
TR610 2SC828
TR614 2SC828
TR615 2SC1317
TR625 2SC1317
TR627 2SC1317
TR623 2SC1317
TR609 2SC1317
TR621 2SC1317
TR622 2SC1317
TR608 2SC828
TR626 2SC1317
TR607 2SC828
TR624 2SC828
TR628 2SC828
TR616 2SC828
TR620 2SC828
TR618 2SC828
TR630 2SC828
TR603 2SC828
TR617 2SC1317
TR606 2SC1317
TR604 2SC828
TR612 2SC828
TR631 2SC1317
TR632 2SC1317
TR605 2SC828
TR613 2SC828
TR619 2SC1317

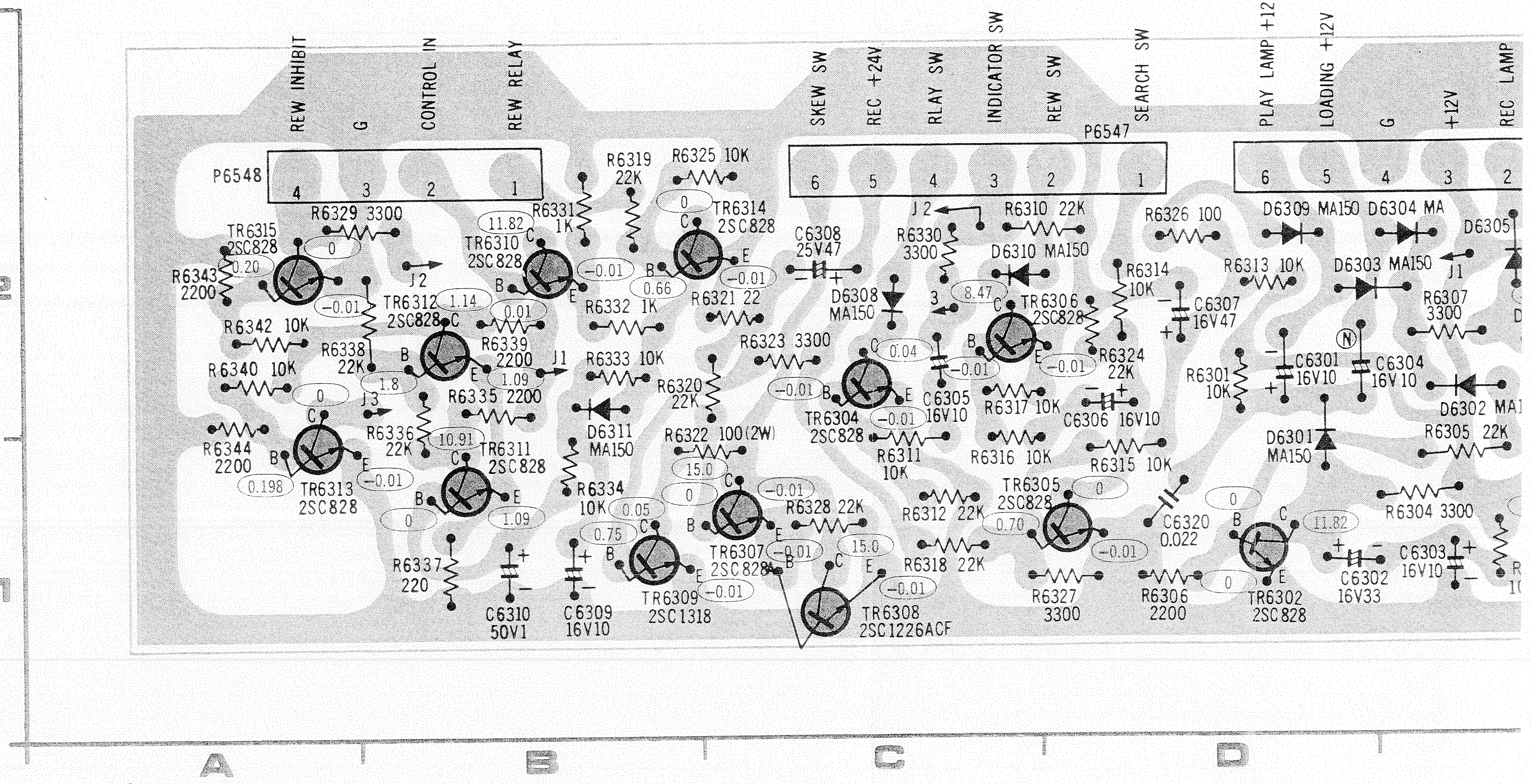
TRANSPORT CONTROL/RECORDING CONTROL/SOLENOID DRIVE CIRCUIT BLOCK DIAGRAM


TRANSPORT CIRCUIT
REC CONTROL CIRCUIT
SOLENOID DRIVE CIRCUIT
REC. CONTROL (VJB00146)
GND at EDIT
EDIT INHIBIT
+12V IN at EDIT
REC. INHIBIT
REC +12V OUT
DUB SW
REC. PLAY, DUB +12V
GND
+12V IN
J6227 ⑦
+12V at NOT REC
REC. +12V
REC. LAMP
J6227 ⑤
REC. SW
PRESSURE ROLL RELAY
+18V IN
REC. PLAY +12V
PLAY LAMP
+12V IN
+12V IN
DUB LAMP.
LOADING SW-B
FF SOL SW
TAKEUP BRAKE SOL.
PAUSE SW-B
PRESSURE ROLLER
SUPPLY BRAKE SOL.
REW SOL.
FF SOL.
EJECT SOL.
SOLENOID DRIVE (VJB0047)
AC 75V
RECTI-FIER
D154
D155
+12V
K150
K151
K152
K153
A.DUB SW
LOADING SW A
REC SW
CDS LAMP
CDS
+12V
INDICATOR SW
AUTO SEARCH SW
SOLENOID CONTROL (VJB0630)
D610
D661
D613
PULSE
LOADING TIMER TR605 IC601 (5)
PRESSURE ROLLER DRIVE TR606
LAMP DETECTION IC601 (3)
TRANSLUCENT TAPE DETECTION IC601 (6) TR607, 608
POST REW TIMER IC601 (3) TR609
POST STOP TIMER IC601 (2)
EJECT TR610, 611
SEARCH C608 R639
REC SET TR612, 613
AND
AUTO PLAY TR604 D622
D628
D614
D615
D660
D618
RECORDING PLAY, EXCEPT PAUSE INHIBITION
D657
PAUSE TR616
D619 D620 D621 PLAY INHIBITION
D624
D630 D631 D632 FF INHIBITION
D634
D637 D638 D639 REW INHIBITION
D642
D652 D653 D654 STOP INHIBITION
PLAY SELF HOLD TR617, 619 D625 (TR618, 620)
D629
FF SELF HOLD TR621, 623 (TR622) D633
D636
REW SELF HOLD TR625, 627 D641 (TR624, 626)
D644
STOP TIMER TR628, D646 IC601 (4)
STOP SELF HOLD TR630, 631 D651 (TR632)
REC CONTROL CIRCUIT
SOLENOID DRIVE CIRCUIT
TO OTHER CIRCUIT
TO EACH CIRCUIT
CARTRIDGE IN, SW
+12V
PAUSE SW-A
PLAY SW
PLAY LAMP
FF SW
FF LAMP
SOLENOID DRIVE
REW SW
REW LAMP
SOLENOID DRIVE
+12V
PLAY, STOP EXCEPT +12V
SERVO MUTING
STOP SW
INHIBITION CONDITION
OPERATION CONDITION

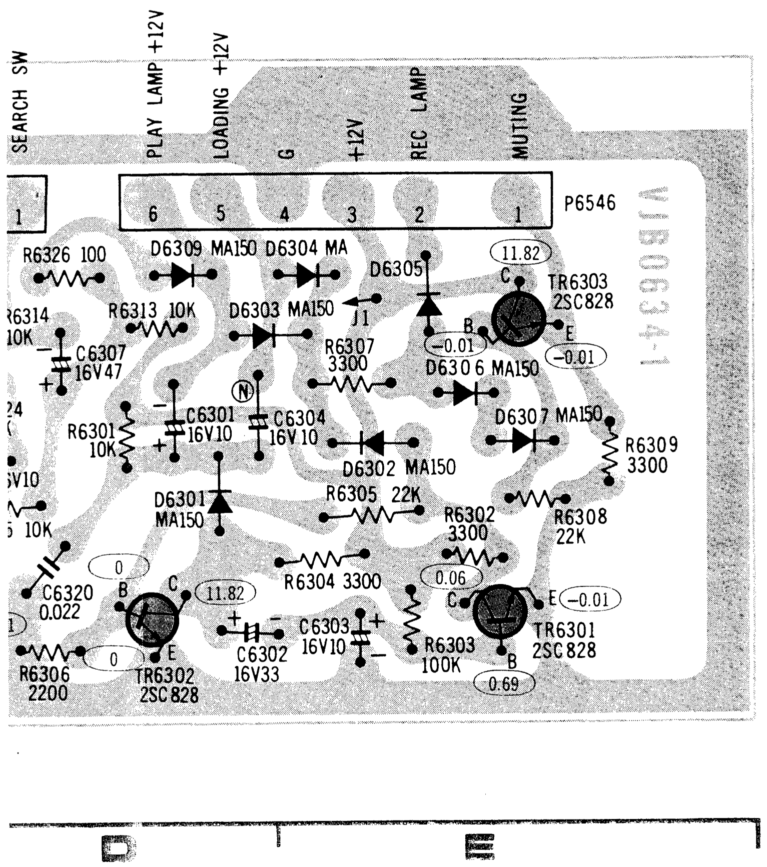
SOLENOID DRIVE CIRCUIT BOARD (VEP0047A)


D153 10D1
D152 10D1
(P6502) ④
(P6502) ⑤
K153
AP13129
K152
AP13129
3
VJB0047
R151
56K
(1/2W)
⑥
D150 10D1
D151 10D1
(P6502) ①
(P6502) ③
② (P6502)
C154
160V220
C150
4700P
R150
2.2(2W)
K150
AP13129
K150
AP13129
D156
MS4
D154 10D10
D155 10D10
P6505
P6506
6
5
4
3
2
1
3
2
1

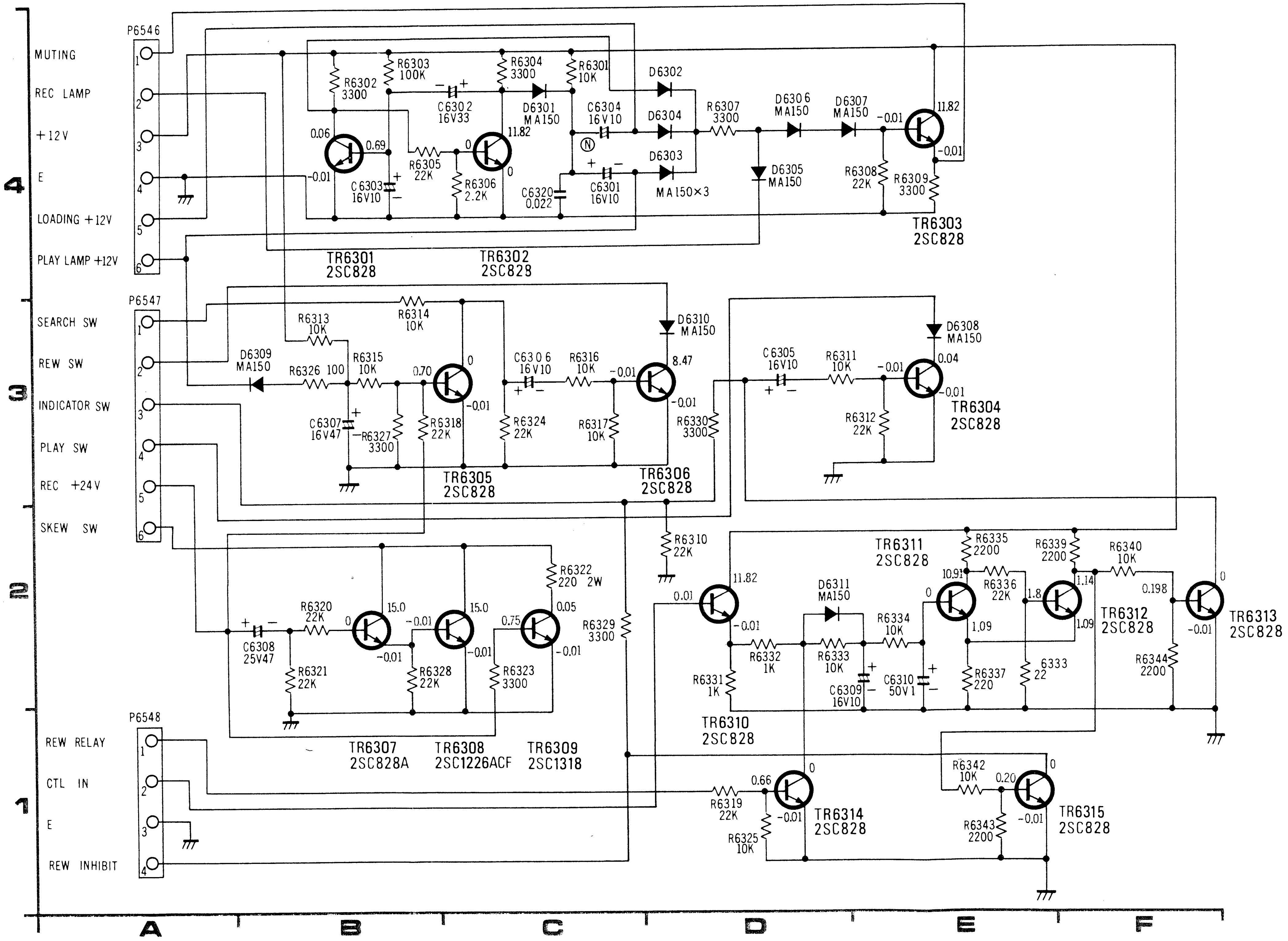
SUB-TRANSPORT CONTROL CIRCUIT BOARD (VEP0634A)


REW INHIBIT
G
CONTROL IN
REW RELAY
SKEW SW
REC +24V
PLAY SW
INDICATOR SW
REW SW
SEARCH SW
PLAY LAMP +12V
LOADING +12V
G
+12V
REC LAMP
P6548
4
3
2
1
P6547
6
5
4
3
2
1
6
5
4
3
2
R6319 22K
R6325 10K
R6329 3300
TR6315 2SC828
R6343 2200
R6331 1K
TR6310 2SC828
TR6314 2SC828
C6308 25V47
J2
R6330 3300
R6310 22K
D6310 MA150
R6326 100
D6309 MA150
D6304 MA
D6305
R6314 10K
R6313 10K
D6303 MA150
J1
TR6312 2SC828
R6332 1K
R6321 22
D6308 MA150
TR6306 2SC828
C6307 16V47
R6307 3300
R6342 10K
R6338 22K
R6339 2200
J1
R6333 10K
R6323 3300
R6324 22K
R6301 10K
C6301 16V10
C6304 16V10
R6340 10K
J3
R6335 2200
R6320 22K
TR6304 2SC828
C6305 16V10
R6317 10K
C6306 16V10
D6302 MA
D6311 MA150
D6301 MA150
R6305 22K
R6344 2200
R6336 22K
TR6311 2SC828
R6322 100(2W)
R6311 10K
R6316 10K
R6315 10K
TR6313 2SC828
R6334 10K
R6328 22K
R6312 22K
TR6305 2SC828
R6304 3300
R6337 220
C6310 50V1
C6309 16V10
TR6309 2SC1318
TR6307 2SC828
R6318 22K
C6320 0.022
C6303 16V10
C6302 16V33
TR6308 2SC1226ACF
R6327 3300
R6306 2200
TR6302 2SC828
0.20
0
11.82
0.66
-0.01
-0.01
1.14
0.01
1.8
1.09
0
10.91
-0.01
0.198
0
1.09
15.0
0.05
0.75
0
-0.01
-0.01
15.0
-0.01
8.47
0.04
-0.01
-0.01
-0.01
0.70
0
-0.01
0
11.82
0
B
C
E
N
2
1
A
B
C
D

SUB-TRANSPORT CONTROL CIRCUIT SECTION (VEP0634A)

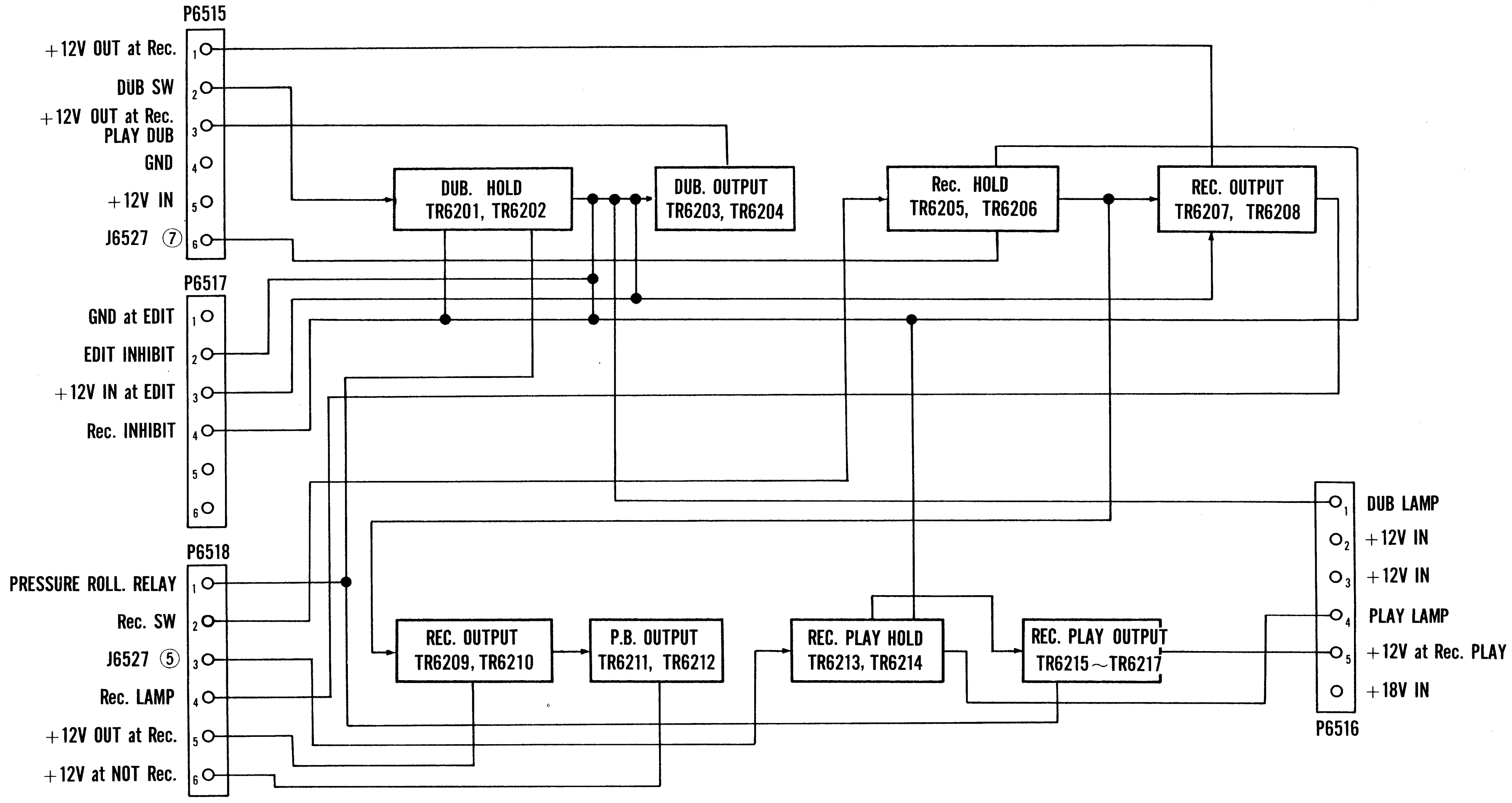


SEARCH SW
PLAY LAMP +12V
LOADING +12V
G
+12V
REC LAMP
MUTING
6 5 4 3 2 1
P6546
VJB0634-1
R6326 100
D6309 MA150
D6304 MA
D6305
11.82
TR6303 2SC828
R6314 10K
R6313 10K
D6303 MA150
J1
C6307 16V47
R6307 3300
-0.01
D6306 MA150
-0.01
C6301 16V10
C6304 16V10
D6307 MA150
R6301 10K
D6302 MA150
R6309 3300
D6301 MA150
R6305 22K
R6302 3300
R6308 22K
C6320 0.022
R6304 3300
0.06
TR6301 2SC828
11.82
C6303 16V10
C6302 16V33
R6303 100K
R6306 2200
TR6302 2SC828
0.69
D
E

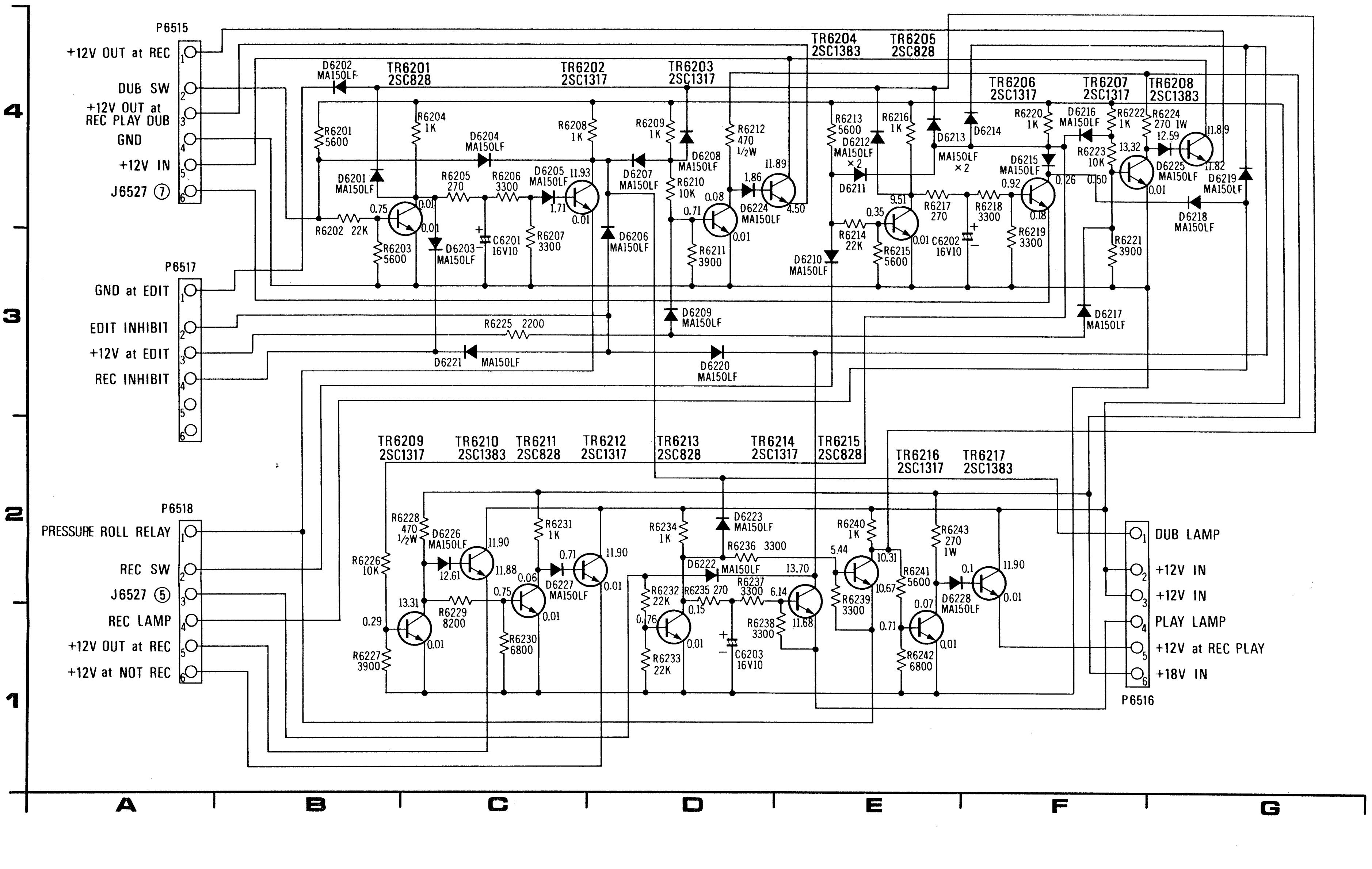


4
3
2
1
P6546
MUTING
REC LAMP
+12V
E
LOADING +12V
PLAY LAMP +12V
R6302 3300
R6303 100K
R6304 3300
R6301 10K
D6302
C6302 16V33
D6301 MA150
C6304 16V10
D6304
R6307 3300
D6306 MA150
D6307 MA150
-0.01
11.82
0.06
0.69
0
11.82
R6305 22K
D6303
C6303 16V10
R6306 2.2K
C6320 0.022
C6301 16V10
MA150×3
D6305 MA150
R6308 22K
R6309 3300
-0.01
-0.01
0
TR6303 2SC828
TR6301 2SC828
TR6302 2SC828
P6547
SEARCH SW
REW SW
INDICATOR SW
PLAY SW
REC +24V
SKEW SW
R6313 10K
R6314 10K
D6310 MA150
D6308 MA150
D6309 MA150
R6326 100
R6315 10K
0.70
0
C6306 16V10
R6316 10K
-0.01
8.47
C6305 16V10
R6311 10K
-0.01
0.04
-0.01
-0.01
-0.01
C6307 16V47
R6327 3300
R6318 22K
R6324 22K
R6317 10K
R6330 3300
R6312 22K
TR6304 2SC828
TR6305 2SC828
TR6306 2SC828
R6310 22K
TR6311 2SC828
R6335 2200
R6339 2200
R6340 10K
R6322 220 2W
11.82
10.91
R6336 22K
1.8
1.14
0.198
0
R6320 22K
15.0
15.0
0.05
0.01
D6311 MA150
0
TR6312 2SC828
TR6313 2SC828
C6308 25V47
0
-0.01
0.75
R6329 3300
-0.01
R6334 10K
1.09
1.09
-0.01
R6321 22K
-0.01
R6328 22K
-0.01
R6323 3300
-0.01
R6332 1K
R6333 10K
R6337 220
6333 22
R6344 2200
R6331 1K
C6309 16V10
C6310 50V1
TR6310 2SC828
P6548
REW RELAY
CTL IN
E
REW INHIBIT
TR6307 2SC828A
TR6308 2SC1226ACF
TR6309 2SC1318
R6342 10K
0
0.20
0
0.66
R6319 22K
-0.01
TR6314 2SC828
R6325 10K
R6343 2200
-0.01
TR6315 2SC828
A
B
C
D
E
F

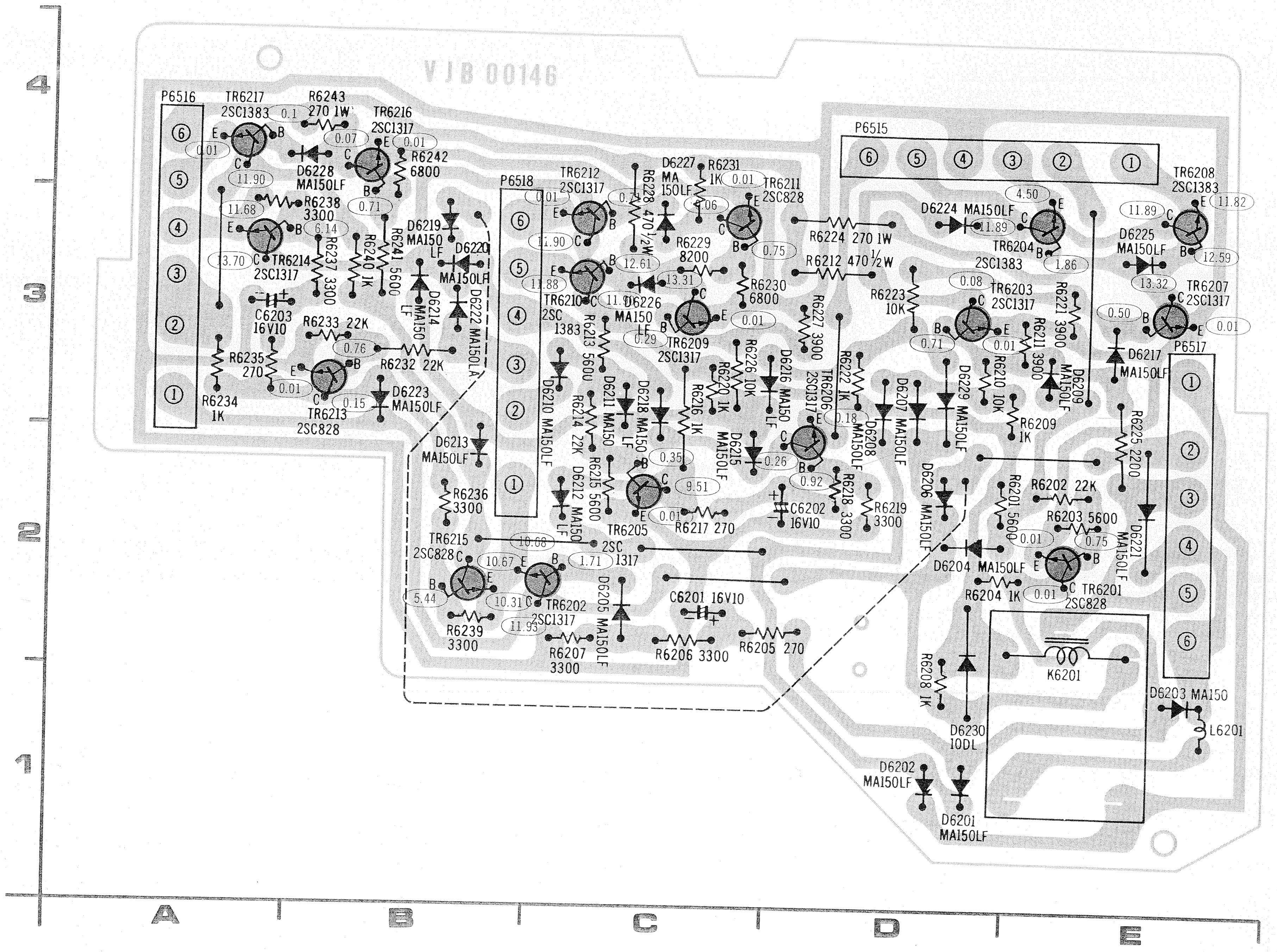
RECORDING CONTROL CIRCUIT BLOCK DIAGRAM


P6515
+12V OUT at Rec.
DUB SW
+12V OUT at Rec. PLAY DUB
GND
+12V IN
J6527 ⑦
P6517
GND at EDIT
EDIT INHIBIT
+12V IN at EDIT
Rec. INHIBIT
P6518
PRESSURE ROLL. RELAY
Rec. SW
J6527 ⑤
Rec. LAMP
+12V OUT at Rec.
+12V at NOT Rec.
DUB. HOLD TR6201, TR6202
DUB. OUTPUT TR6203, TR6204
Rec. HOLD TR6205, TR6206
REC. OUTPUT TR6207, TR6208
REC. OUTPUT TR6209, TR6210
P.B. OUTPUT TR6211, TR6212
REC. PLAY HOLD TR6213, TR6214
REC. PLAY OUTPUT TR6215~TR6217
DUB LAMP
+12V IN
+12V IN
PLAY LAMP
+12V at Rec. PLAY
+18V IN
P6516

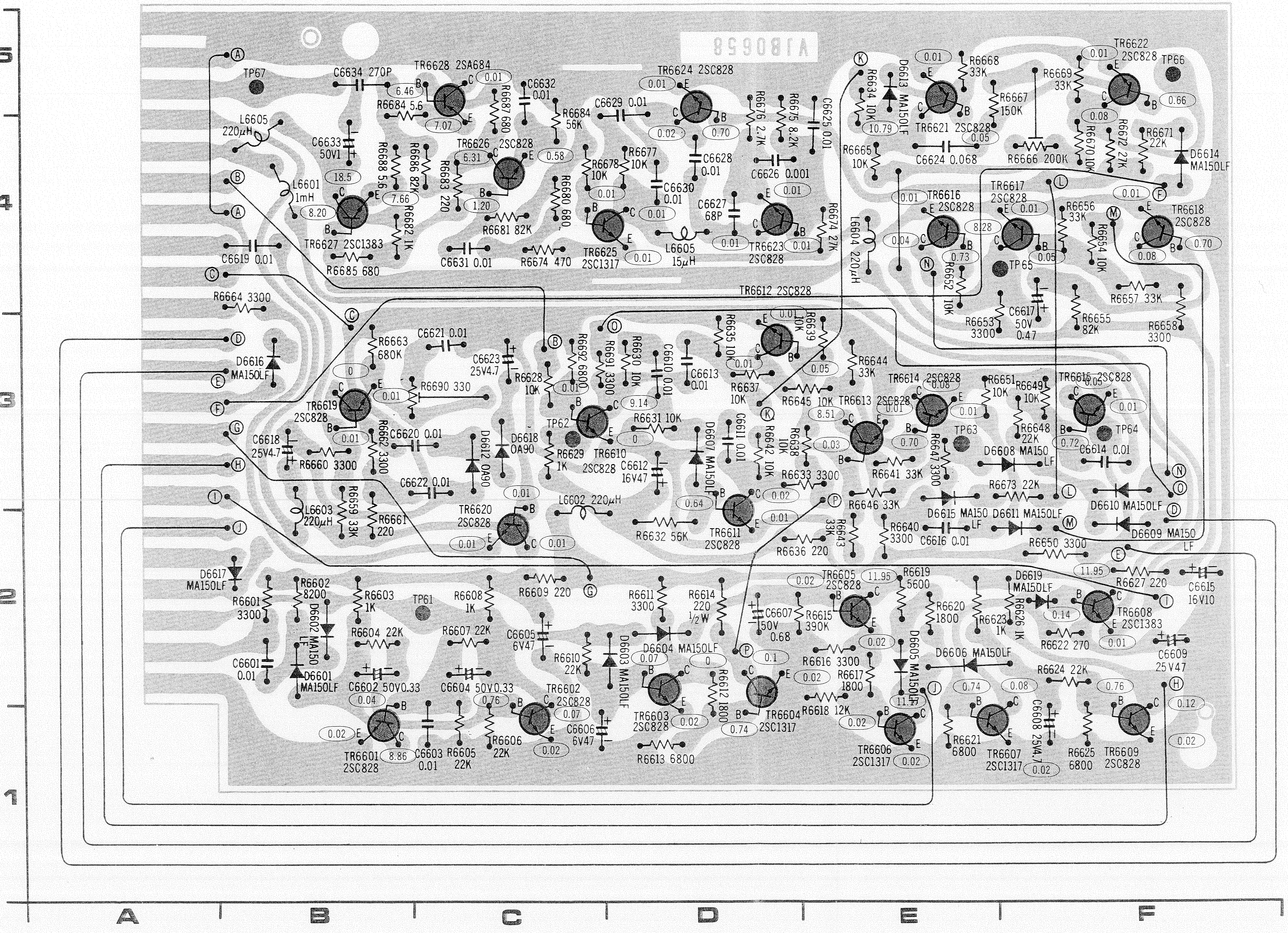
RECORDING CONTROL CIRCUIT SECTION (VEP00146A)


P6515
+12V OUT at REC
DUB SW
+12V OUT at REC PLAY DUB
GND
+12V IN
J6527 ⑦
P6517
GND at EDIT
EDIT INHIBIT
+12V at EDIT
REC INHIBIT
P6518
PRESSURE ROLL RELAY
REC SW
J6527 ⑤
REC LAMP
+12V OUT at REC
+12V at NOT REC
DUB LAMP
+12V IN
+12V IN
PLAY LAMP
+12V at REC PLAY
+18V IN
P6516
TR6201 2SC828
TR6202 2SC1317
TR6203 2SC1317
TR6204 2SC1383
TR6205 2SC828
TR6206 2SC1317
TR6207 2SC1317
TR6208 2SC1383
TR6209 2SC1317
TR6210 2SC1383
TR6211 2SC828
TR6212 2SC1317
TR6213 2SC828
TR6214 2SC1317
TR6215 2SC828
TR6216 2SC1317
TR6217 2SC1383
D6202 MA150LF
R6201 5600
D6201 MA150LF
R6202 22K
R6203 5600
R6204 1K
D6204 MA150LF
R6205 270
R6206 3300
D6203 MA150LF
C6201 16V10
R6207 3300
D6205 MA150LF
R6208 1K
D6207 MA150LF
D6206 MA150LF
R6209 1K
D6208 MA150LF
R6210 10K
R6211 3900
R6212 470 1/2W
D6224 MA150LF
D6209 MA150LF
R6225 2200
D6221 MA150LF
D6220 MA150LF
R6213 5600
D6212 MA150LF ×2
D6211
R6214 22K
R6215 5600
D6210 MA150LF
R6216 1K
D6213 MA150LF ×2
D6214
R6217 270
R6218 3300
C6202 16V10
R6219 3300
R6220 1K
D6215 MA150LF
D6216 MA150LF
R6222 1K
R6223 10K
R6224 270 1W
D6225 MA150LF
D6219 MA150LF
D6218 MA150LF
R6221 3900
D6217 MA150LF
R6228 470 1/2W
D6226 MA150LF
R6226 10K
R6229 8200
R6227 3900
R6230 6800
R6231 1K
D6227 MA150LF
R6234 1K
D6223 MA150LF
R6236 3300
D6222 MA150LF
R6235 270
R6237 3300
R6232 22K
R6233 22K
C6203 16V10
R6238 3300
R6240 1K
R6239 3300
R6241 5600
R6243 270 1W
D6228 MA150LF
R6242 6800
0.75
0.01
0.01
1.71
11.93
0.01
0.71
0.08
1.86
11.89
4.50
0.01
0.35
9.51
0.01
0.92
0.26
0.18
0.50
13.32
12.59
11.89
11.82
0.01
13.31
0.29
0.01
12.61
11.90
11.88
0.06
0.75
0.01
0.71
11.90
0.01
0.15
0.76
0.01
13.70
6.14
11.68
5.44
10.31
10.67
0.71
0.07
0.01
0.1
11.90
0.01
4
3
2
1
A
B
C
D
E
F
G

RECORDING CONTROL CIRCUIT BOARD (VEP00146A)

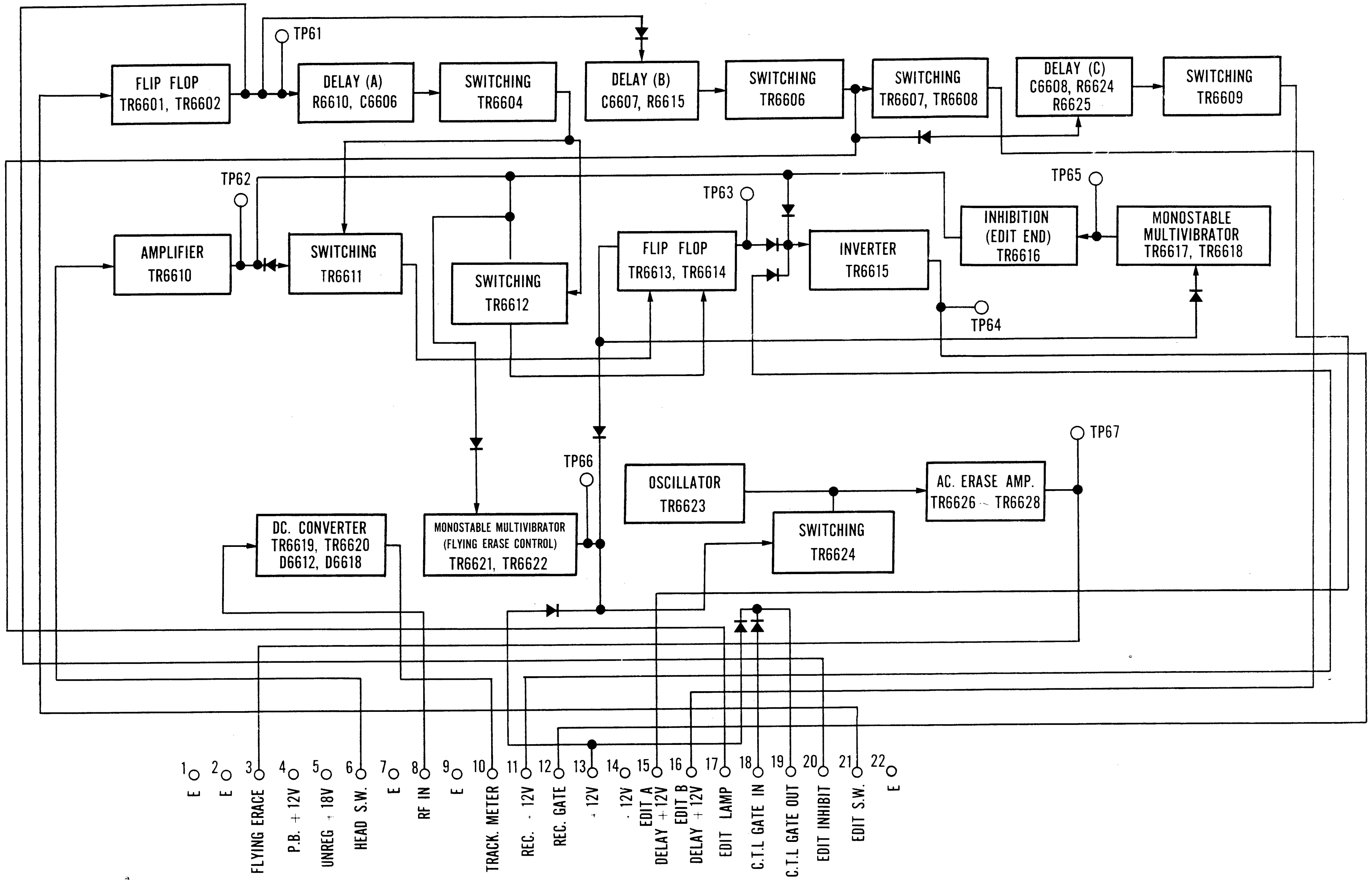

VJB 00146
4
3
2
1
A
B
C
D
E
P6516
TR6217 2SC1383
R6243 270 1W
TR6216 2SC1317
R6242 6800
D6228 MA150LF
R6238 3300
TR6214 2SC1317
R6237 3300
R6240 1K
R6241 5600
D6219 MA150 LF
D6220 MA150LF
D6214 MA150 LF
D6222 MA150LA
C6203 16V10
R6233 22K
R6232 22K
R6235 270
R6234 1K
TR6213 2SC828
D6223 MA150LF
D6213 MA150LF
R6236 3300
P6518
TR6212 2SC1317
TR6210 2SC 1383
D6227 MA 150LF
R6228 470 1/2W
R6231 1K
TR6211 2SC828
R6229 8200
D6226 MA150 LF
R6230 6800
TR6209 2SC1317
R6213 5600
D6210 MA150LF
D6211 MA150
R6214 22K
D6218 MA150 LF
R6215 5600
D6212 MA150 LF
R6216 1K
R6220 1K
R6226 10K
D6215 MA150LF
D6216 MA150 LF
TR6205
R6217 270
C6202 16V10
TR6206 2SC1317
R6218 3300
R6219 3300
R6227 3900
R6222 1K
R6224 270 1W
R6212 470 1/2W
P6515
D6224 MA150LF
TR6204 2SC1383
TR6208 2SC1383
D6225 MA150LF
TR6207 2SC1317
TR6203 2SC1317
R6223 10K
R6221 3900
R6211 3900
R6210 10K
D6209 MA150LF
D6208 MA150LF
D6207 MA150LF
D6229 MA150LF
R6209 1K
D6217 MA150LF
P6517
R6225 2200
D6206 MA150LF
R6201 5600
R6202 22K
R6203 5600
D6221 MA150LF
D6204 MA150LF
R6204 1K
TR6201 2SC828
TR6215 2SC828
TR6202 2SC1317
2SC 1317
R6239 3300
R6207 3300
D6205 MA150LF
C6201 16V10
R6206 3300
R6205 270
R6208 1K
K6201
D6230 10DL
D6203 MA150
L6201
D6202 MA150LF
D6201 MA150LF
0.1
0.07
0.01
0.01
11.90
11.68
0.71
6.14
13.70
0.76
0.01
0.15
0.01
11.90
11.88
0.29
12.61
13.31
0.06
0.01
0.75
0.01
11.9
0.29
0.35
9.51
0.01
0.26
0.92
0.18
10.68
10.67
1.71
5.44
10.31
11.93
4.50
11.89
1.86
0.08
0.71
0.01
11.89
11.82
12.59
13.32
0.50
0.01
0.01
0.75
0.01
E
B
C
①
②
③
④
⑤
⑥

TIMING CIRCUIT BOARD (VEP0658A)

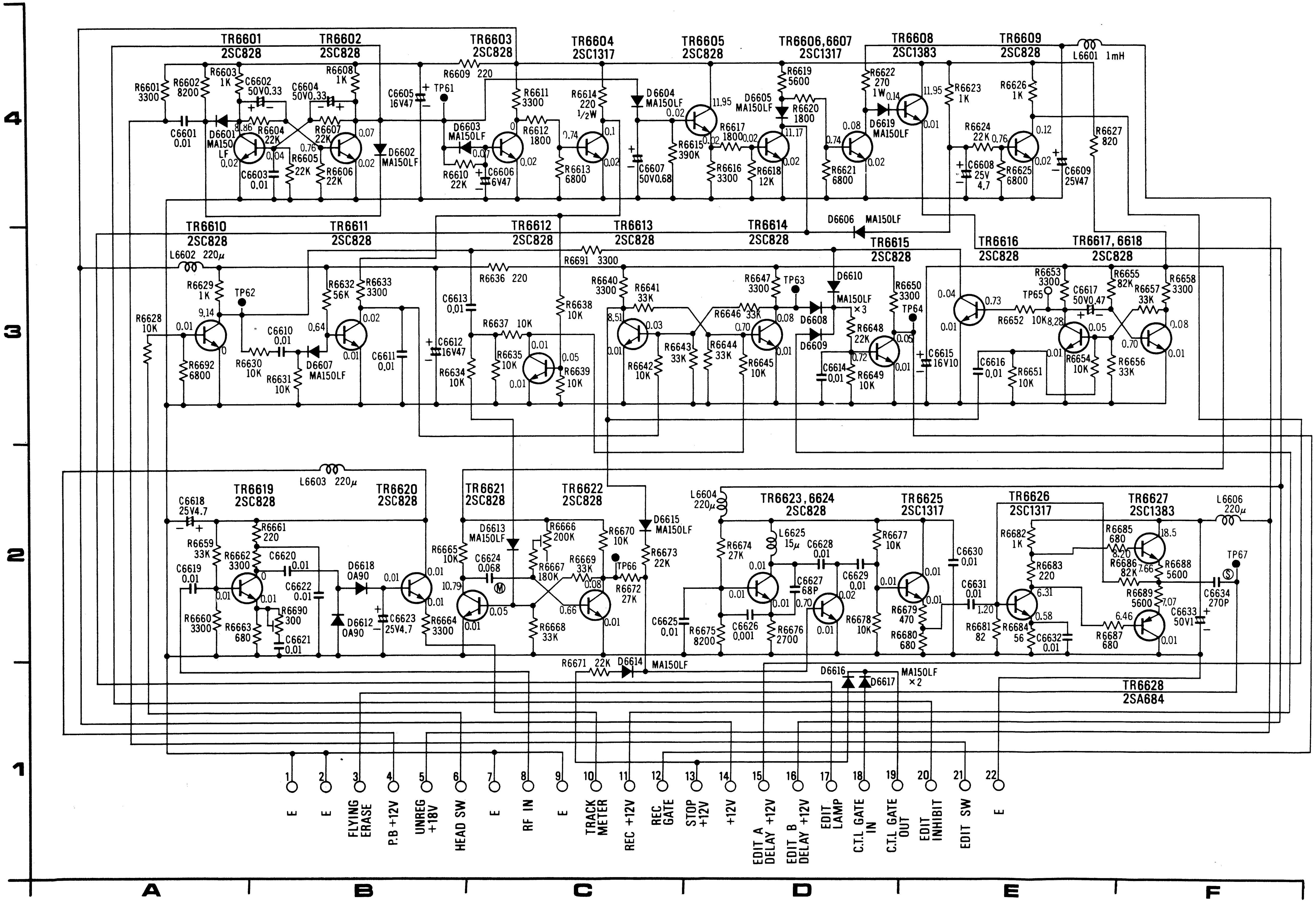


VJB0658
5
4
3
2
1
A
B
C
D
E
F
TP67
C6634 270P
TR6628 2SA684
C6632 0.01
R6684 5.6
R6687 680
L6605 220μH
C6633 50V1
R6688 5.6
R6686 82K
R6683 220
TR6626 2SC828
R6684 56K
C6629 0.01
TR6624 2SC828
L6601 1mH
TR6627 2SC1383
R6682 1K
R6685 680
R6681 82K
R6680 680
R6678 10K
R6677 10K
C6630 0.01
C6628 0.01
TR6625 2SC1317
L6605 15μH
C6631 0.01
R6674 470
C6619 0.01
R6676 2.7K
R6675 8.2K
C6625 0.01
C6626 0.001
C6627 68P
TR6623 2SC828
R6674 27K
L6604 220μH
R6634 10K
D6613 MA150LF
R6665 10K
TR6621 2SC828
R6668 33K
R6667 150K
C6624 0.068
R6666 200K
R6669 33K
TR6622 2SC828
TP66
R6670 10K
R6672 27K
R6671 22K
D6614 MA150LF
TR6616 2SC828
TR6617 2SC828
R6656 33K
TR6618 2SC828
R6654 10K
R6652 10K
TP65
C6617 50V 0.47
R6653 3300
R6655 82K
R6657 33K
R6658 3300
R6664 3300
TR6612 2SC828
R6663 680K
C6621 0.01
C6623 25V4.7
R6628 10K
R6692 6800
R6691 3300
R6630 10K
C6610 0.01
C6613 0.01
R6635 10K
R6639 10K
R6644 33K
D6616 MA150LF
R6690 330
TR6619 2SC828
R6637 10K
R6645 10K
TR6613 2SC828
TR6614 2SC828
R6651 10K
R6649 10K
TR6615 2SC828
C6618 25V4.7
C6620 0.01
D6612 0A90
D6618 0A90
TP62
R6629 1K
TR6610 2SC828
R6631 10K
C6612 16V47
D6607 MA150LF
C6611 0.01
R6642 10K
R6638 10K
R6648 22K
R6647 3300
TP63
D6608 MA150LF
TP64
C6614 0.01
R6660 3300
R6662 3300
C6622 0.01
R6633 3300
R6641 33K
R6673 22K
L6603 220μH
R6659 33K
R6661 220
TR6620 2SC828
L6602 220μH
R6632 56K
TR6611 2SC828
R6646 33K
R6643 33K
R6640 3300
D6615 MA150LF
C6616 0.01
D6611 MA150LF
D6610 MA150LF
D6609 MA150LF
R6650 3300
R6636 220
D6617 MA150LF
R6601 3300
R6602 8200
D6602 MA150LF
R6603 1K
TP61
R6608 1K
R6609 220
R6611 3300
R6614 220 1/2W
C6607 50V 0.68
R6615 390K
TR6605 2SC828
R6619 5600
R6620 1800
R6623 1K
D6619 MA150LF
R6626 1K
TR6608 2SC1383
R6627 220
C6615 16V10
R6604 22K
R6607 22K
C6605 6V47
R6610 22K
D6603 MA150LF
D6604 MA150LF
R6616 3300
R6617 1800
D6605 MA150LF
D6606 MA150LF
R6622 270
C6609 25V47
R6624 22K
C6601 0.01
D6601 MA150LF
C6602 50V0.33
C6604 50V0.33
TR6602 2SC828
C6606 6V47
TR6603 2SC828
R6612 1800
TR6604 2SC1317
R6618 12K
TR6606 2SC1317
R6621 6800
TR6607 2SC1317
C6608 25V4.7
R6625 6800
TR6609 2SC828
TR6601 2SC828
C6603 0.01
R6605 22K
R6606 22K
R6613 6800

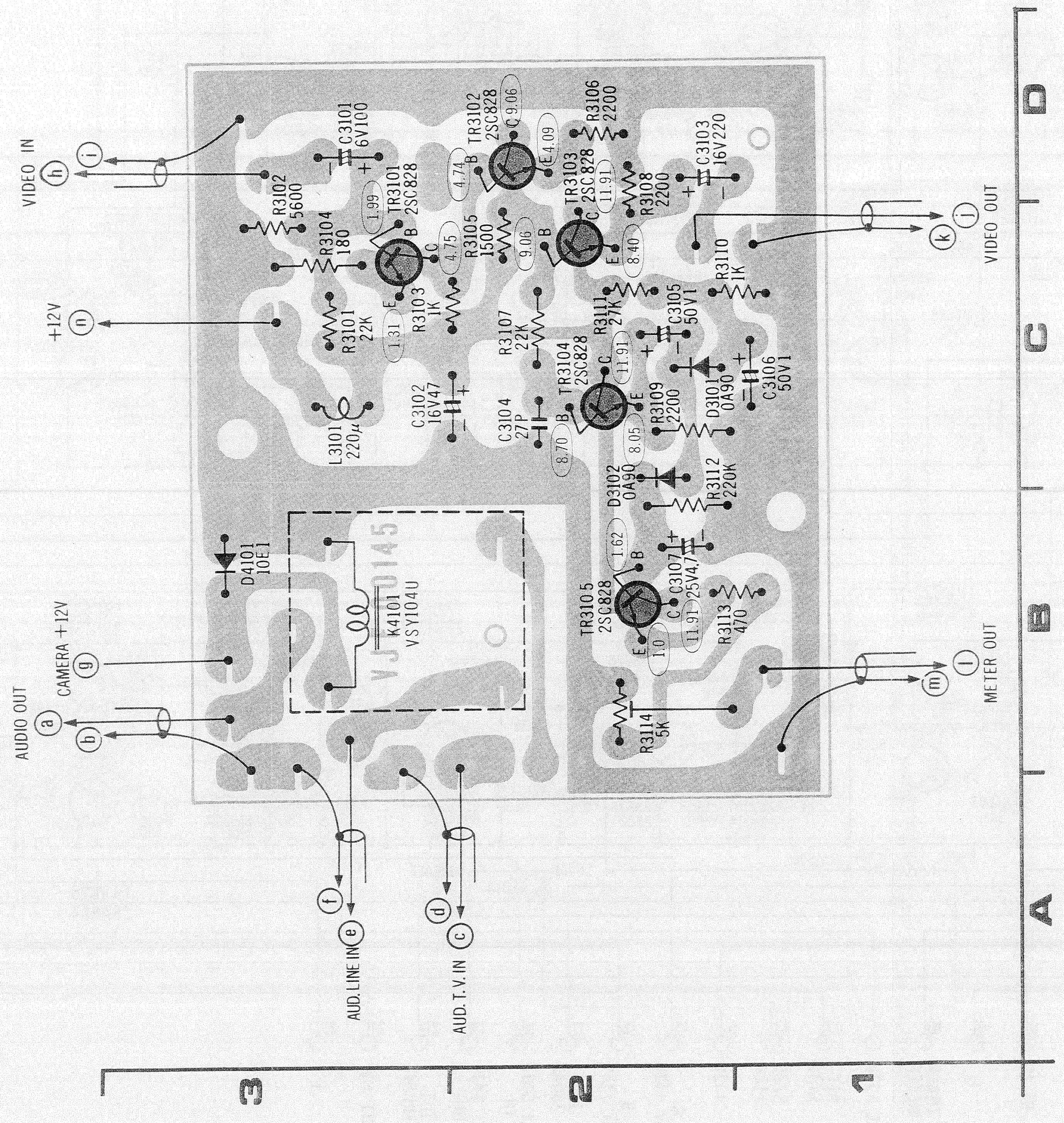
TIMING CIRCUIT BLOCK DIAGRAM


FLIP FLOP TR6601, TR6602
TP61
DELAY (A) R6610, C6606
SWITCHING TR6604
DELAY (B) C6607, R6615
SWITCHING TR6606
SWITCHING TR6607, TR6608
DELAY (C) C6608, R6624 R6625
SWITCHING TR6609
TP62
AMPLIFIER TR6610
SWITCHING TR6611
SWITCHING TR6612
TP63
FLIP FLOP TR6613, TR6614
INVERTER TR6615
TP65
INHIBITION (EDIT END) TR6616
MONOSTABLE MULTIVIBRATOR TR6617, TR6618
TP64
TP67
TP66
OSCILLATOR TR6623
AC. ERASE AMP. TR6626 ~ TR6628
SWITCHING TR6624
DC. CONVERTER TR6619, TR6620 D6612, D6618
MONOSTABLE MULTIVIBRATOR (FLYING ERASE CONTROL) TR6621, TR6622
1 E
2 E
3 FLYING ERACE
4 P.B. +12V
5 UNREG +18V
6 HEAD S.W.
7 E
8 RF IN
9 E
10 TRACK. METER
11 REC. +12V
12 REC. GATE
13 +12V
14 -12V
15 EDIT A DELAY +12V
16 EDIT B DELAY +12V
17 EDIT LAMP
18 C.T.L GATE IN
19 C.T.L GATE OUT
20 EDIT INHIBIT
21 EDIT S.W.
22 E

TIMING CIRCUIT SECTION (VEP0658A)

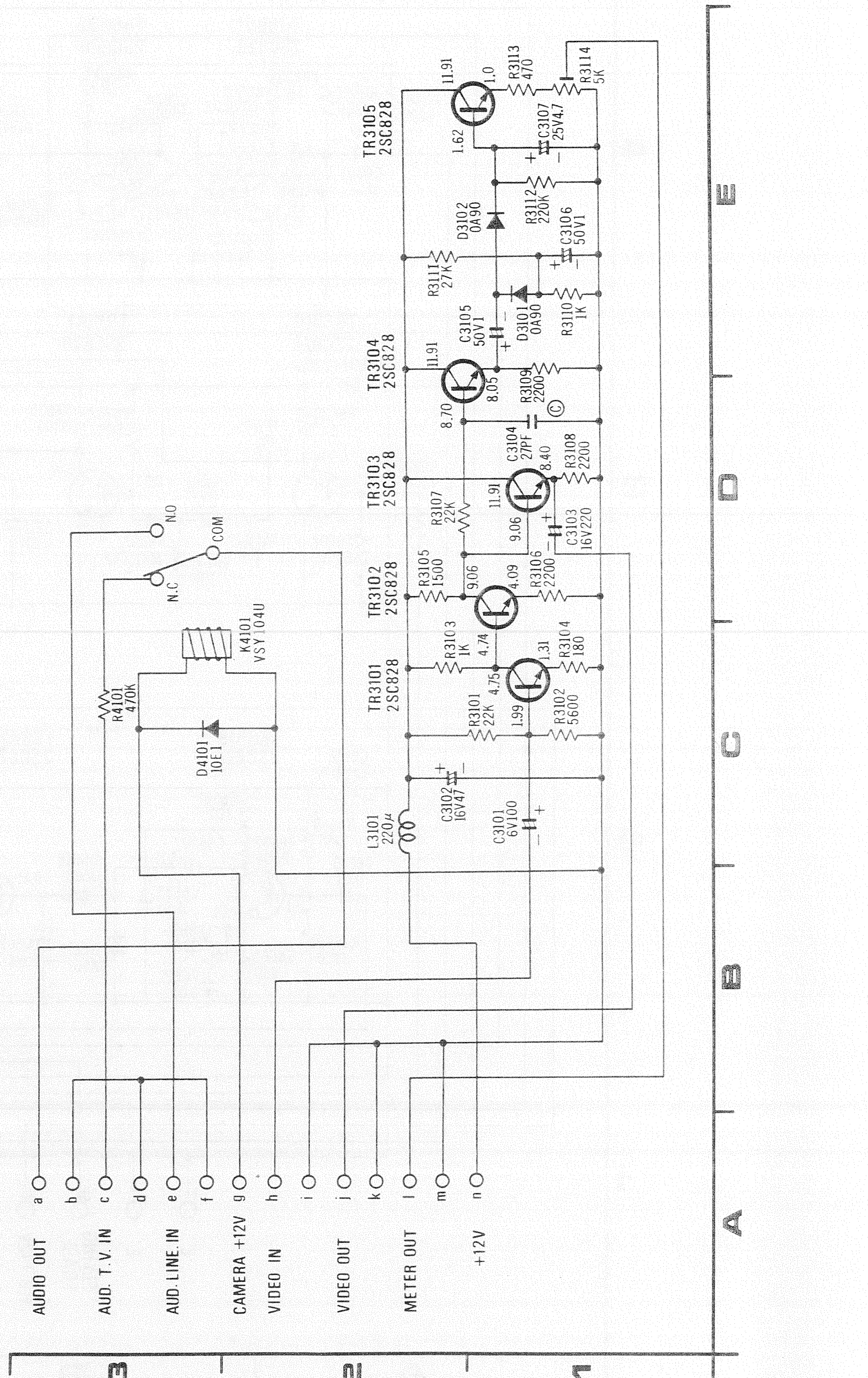

TR6601 2SC828
TR6602 2SC828
TR6603 2SC828
TR6604 2SC1317
TR6605 2SC828
TR6606,6607 2SC1317
TR6608 2SC1383
TR6609 2SC828
L6601 1mH
TR6610 2SC828
TR6611 2SC828
TR6612 2SC828
TR6613 2SC828
TR6614 2SC828
TR6615 2SC828
TR6616 2SC828
TR6617, 6618 2SC828
D6606 MA150LF
L6602 220μ
TP61
TP62
TP63
TP64
TP65
TP66
TP67
TR6619 2SC828
TR6620 2SC828
TR6621 2SC828
TR6622 2SC828
TR6623, 6624 2SC828
TR6625 2SC1317
TR6626 2SC1317
TR6627 2SC1383
TR6628 2SA684
L6603 220μ
L6604 220μ
L6606 220μ
D6616 D6617 MA150LF ×2
1 E
2 E
3 FLYING ERASE
4 P.B +12V
5 UNREG +18V
6 HEAD SW
7 E
8 RF IN
9 E
10 TRACK METER
11 REC +12V
12 REC GATE
13 STOP +12V
14 +12V
15 EDIT A DELAY +12V
16 EDIT B DELAY +12V
17 EDIT LAMP
18 C.T.L GATE IN
19 C.T.L GATE OUT
20 EDIT INHIBIT
21 EDIT SW
22 E
4
3
2
1
A
B
C
D
E
F

METER & RELAY CIRCUIT BOARD (VEP00145A)



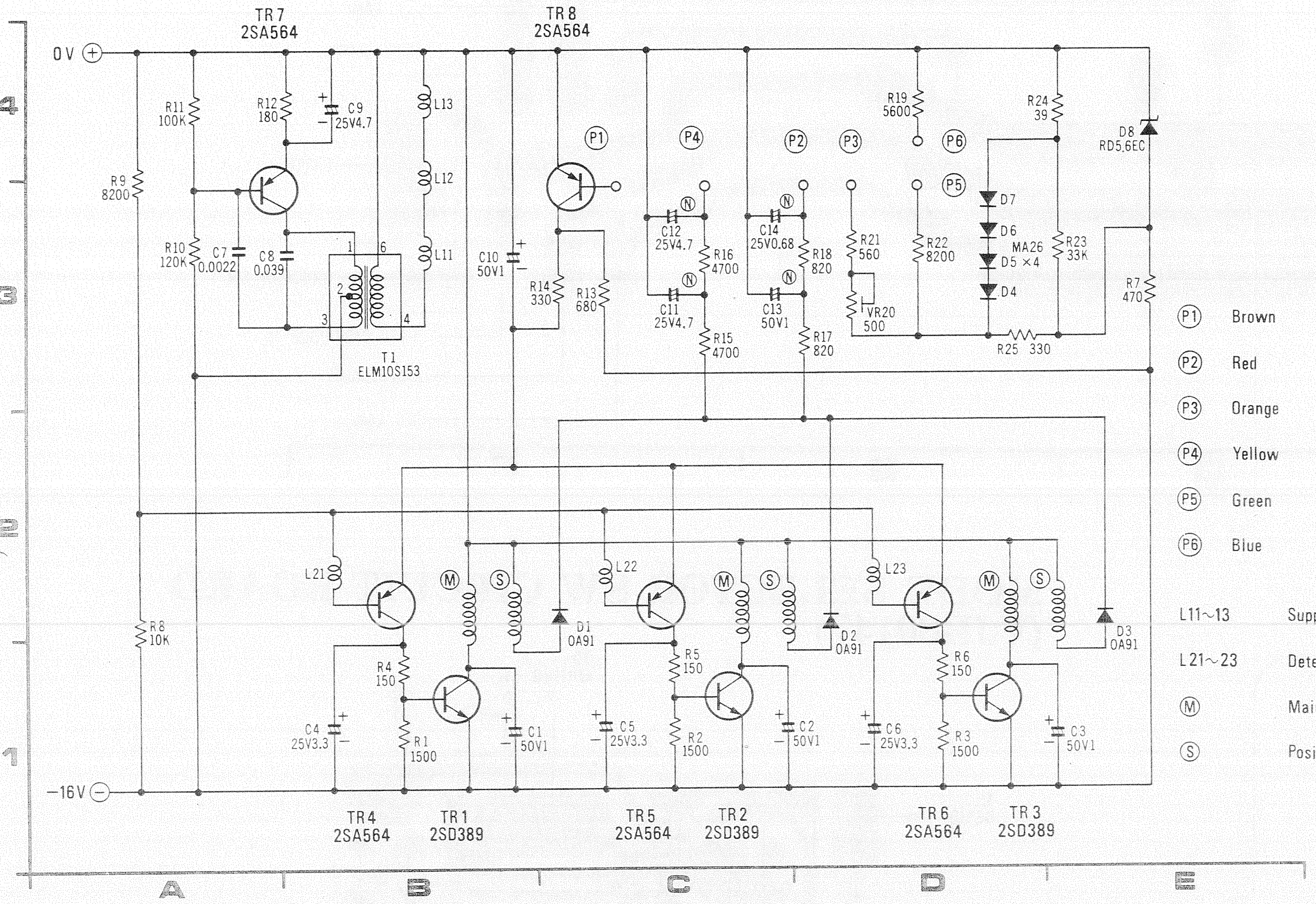
VIDEO IN
+12V
CAMERA +12V
AUDIO OUT
AUD. LINE IN
AUD. T.V. IN
VIDEO OUT
METER OUT
TR3101 2SC828
TR3102 2SC828
TR3103 2SC828
TR3104 2SC828
TR3105 2SC828
K4101 VSY104U
D4101 10E1
D3101 0A90
D3102 0A90
L3101 220μ
A
B
C
D
1
2
3

METER & RELAY CIRCUIT SECTION (VEP00145A)

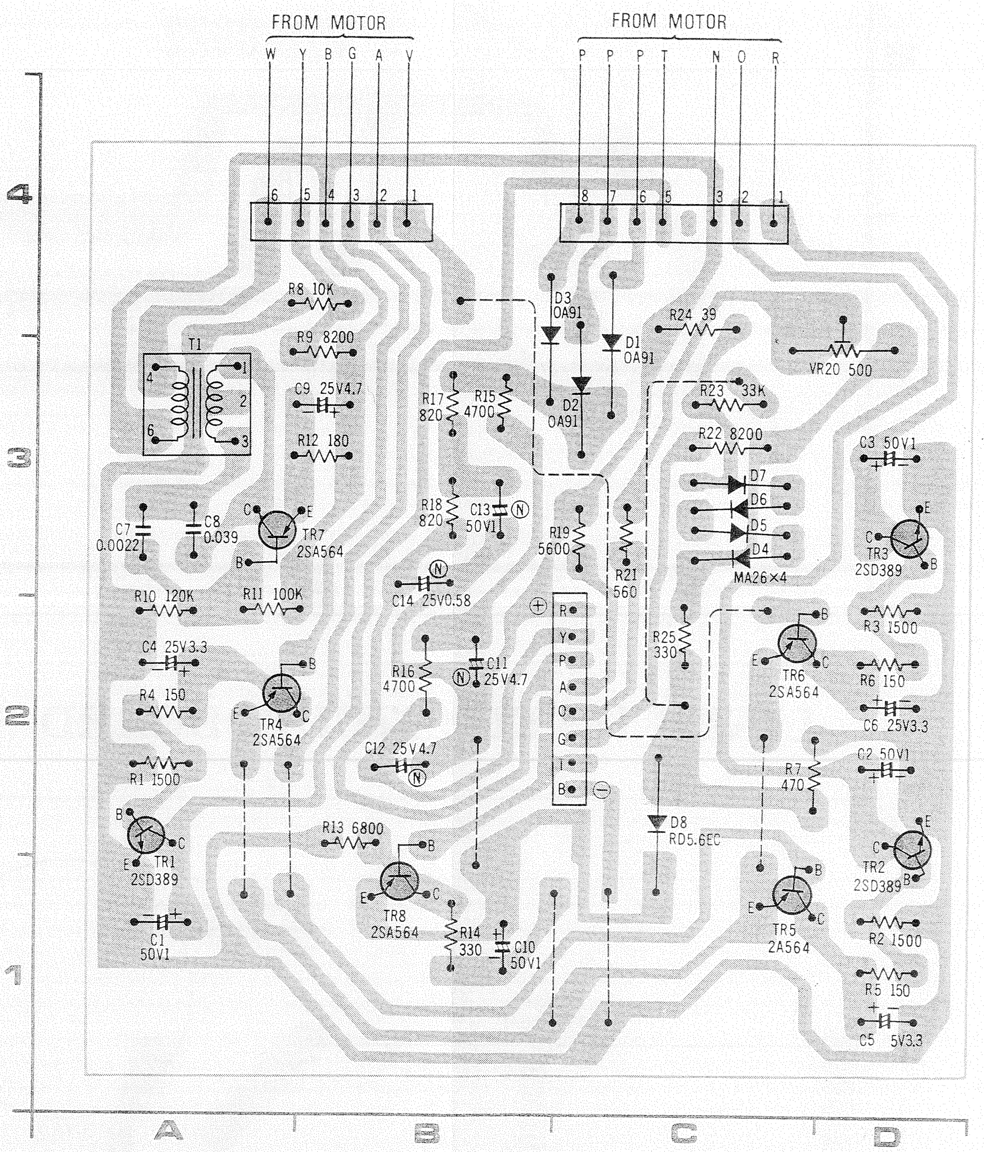


AUDIO OUT
AUD. T.V. IN
AUD. LINE IN
CAMERA +12V
VIDEO IN
VIDEO OUT
METER OUT
+12V
N.O
N.C
COM
K4101 VSY104U
R4101 470K
D4101 10E1
TR3101 2SC828
TR3102 2SC828
TR3103 2SC828
TR3104 2SC828
TR3105 2SC828
L3101 220μ
A
B
C
D
E
1
2
3

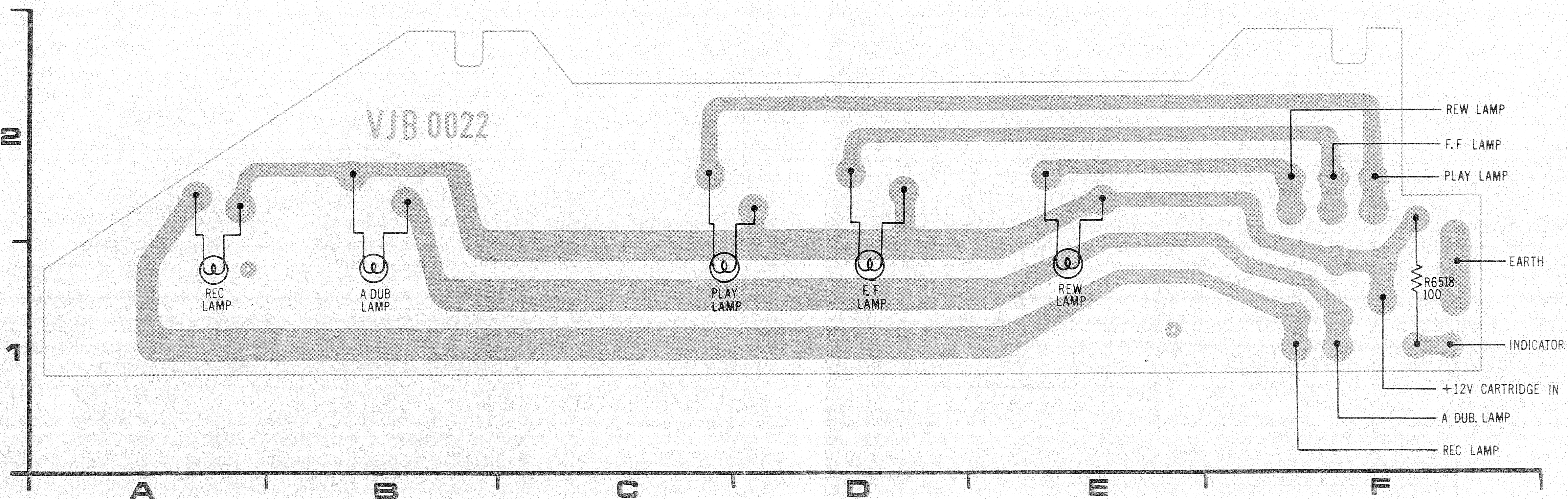
DC MOTOR DRIVE CIRCUIT SECTION (MGL12)


TR7 2SA564
TR8 2SA564
0V ⊕
−16V ⊖
R11 100K
R12 180
C9 25V4.7
L13
L12
L11
R9 8200
R10 120K
C7 0.0022
C8 0.039
T1 ELM10S153
C10 50V1
R14 330
R13 680
C12 25V4.7
R16 4700
C11 25V4.7
R15 4700
C14 25V0.68
R18 820
C13 50V1
R17 820
R21 560
VR20 500
R19 5600
R22 8200
R24 39
D7
D6
MA26 D5 ×4
D4
R23 33K
R25 330
D8 RD5.6EC
R7 470
Wiring
Ⓟ1 Brown
Ⓟ2 Red
Ⓟ3 Orange
Ⓟ4 Yellow
Ⓟ5 Green
Ⓟ6 Blue
Normal
Slow
10K
L11~13 Supply Primary
L21~23 Detection Secondary
Ⓜ Main Coil
Ⓢ Position Coil
L21
L22
L23
R8 10K
R4 150
R1 1500
C4 25V3.3
C1 50V1
D1 OA91
R5 150
R2 1500
C5 25V3.3
C2 50V1
D2 OA91
R6 150
R3 1500
C6 25V3.3
C3 50V1
D3 OA91
TR4 2SA564
TR1 2SD389
TR5 2SA564
TR2 2SD389
TR6 2SA564
TR3 2SD389
A
B
C
D
E
1
2
3
4

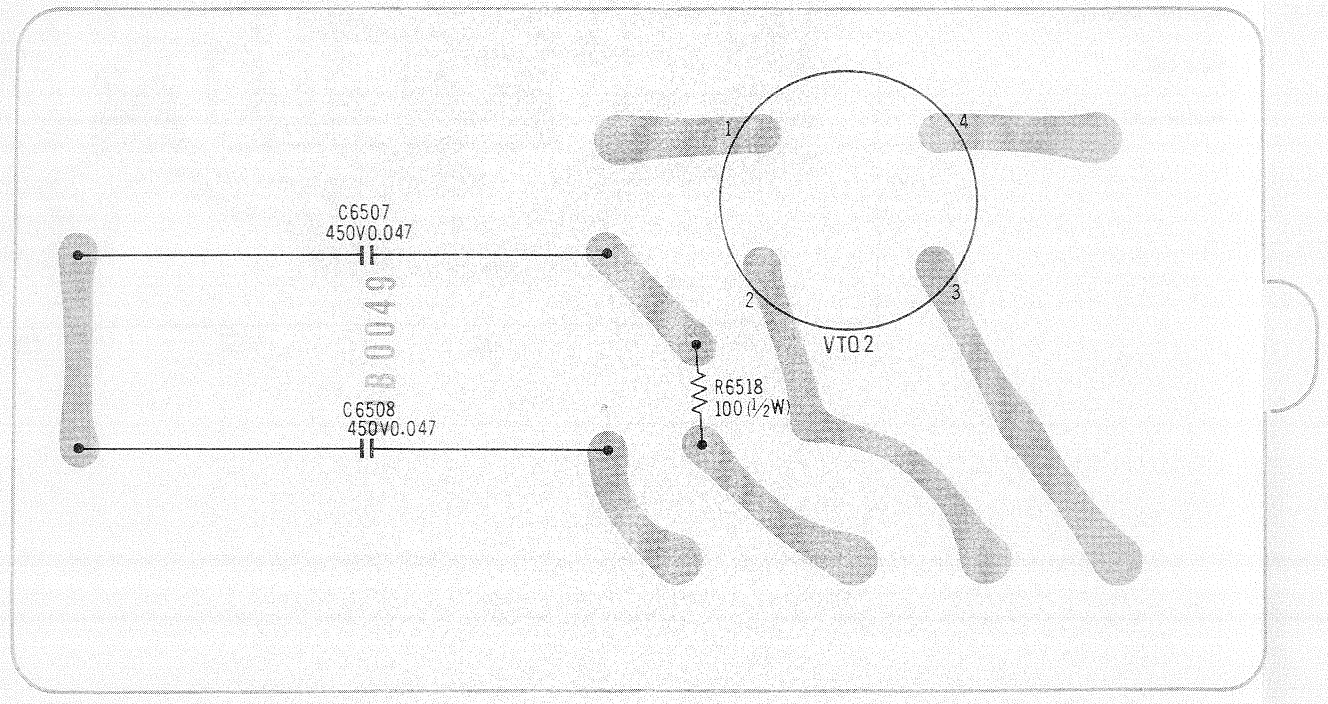
DC MOTOR DRIVE CIRCUIT BOARD (MGL12)


FROM MOTOR
W Y B G A V
FROM MOTOR
P P P T N O R
T1
R8 10K
R9 8200
C9 25V4.7
R12 180
C7 0.0022
C8 0.039
TR7 2SA564
R10 120K
R11 100K
C4 25V3.3
R4 150
TR4 2SA564
R1 1500
TR1 2SD389
C1 50V1
R13 6800
TR8 2SA564
R14 330
C10 50V1
R17 820
R15 4700
R18 820
C13 50V1
C14 25V0.58
R16 4700
C11 25V4.7
C12 25V4.7
R19 5600
R21 560
D3 OA91
D2 OA91
D1 OA91
R24 39
VR20 500
R23 33K
R22 8200
D7
D6
D5
D4
MA26×4
R25 330
D8 RD5.6EC
C3 50V1
TR3 2SD389
R3 1500
TR6 2SA564
R6 150
C6 25V3.3
C2 50V1
R7 470
TR2 2SD389
TR5 2A564
R2 1500
R5 150
C5 5V3.3
A
B
C
D
1
2
3
4

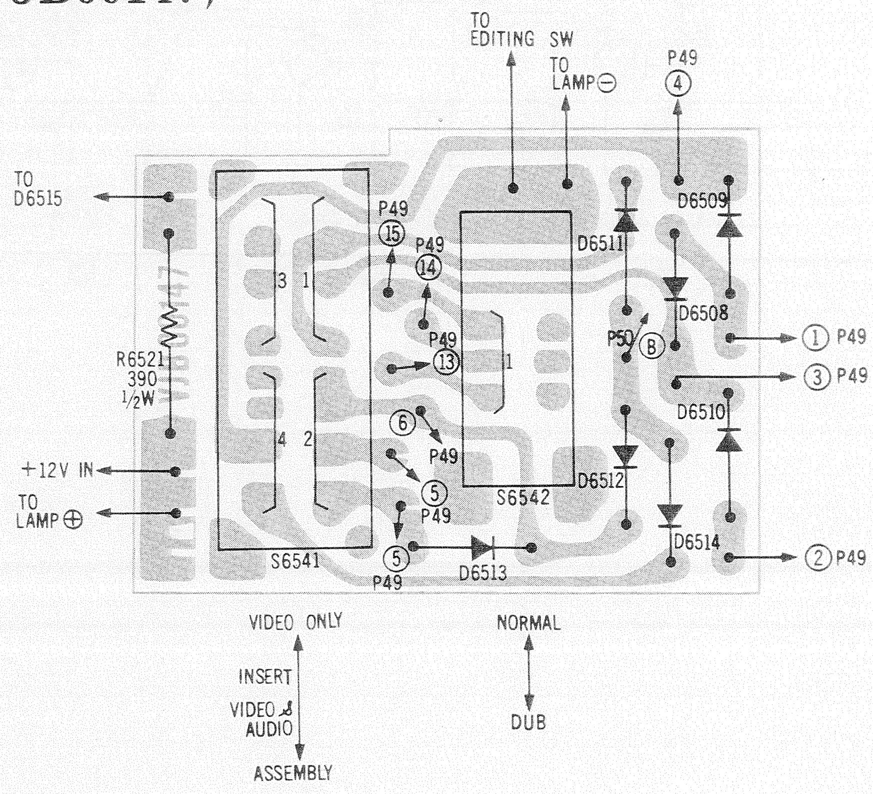
LAMP TERMINAL CIRCUIT BOARD (VJB0022A)


VJB 0022
REC LAMP
A DUB LAMP
PLAY LAMP
F.F LAMP
REW LAMP
REW LAMP
F.F LAMP
PLAY LAMP
EARTH
R6518 100
INDICATOR SW
+12V CARTRIDGE IN
A DUB. LAMP
REC LAMP
2
1
A
B
C
D
E
F

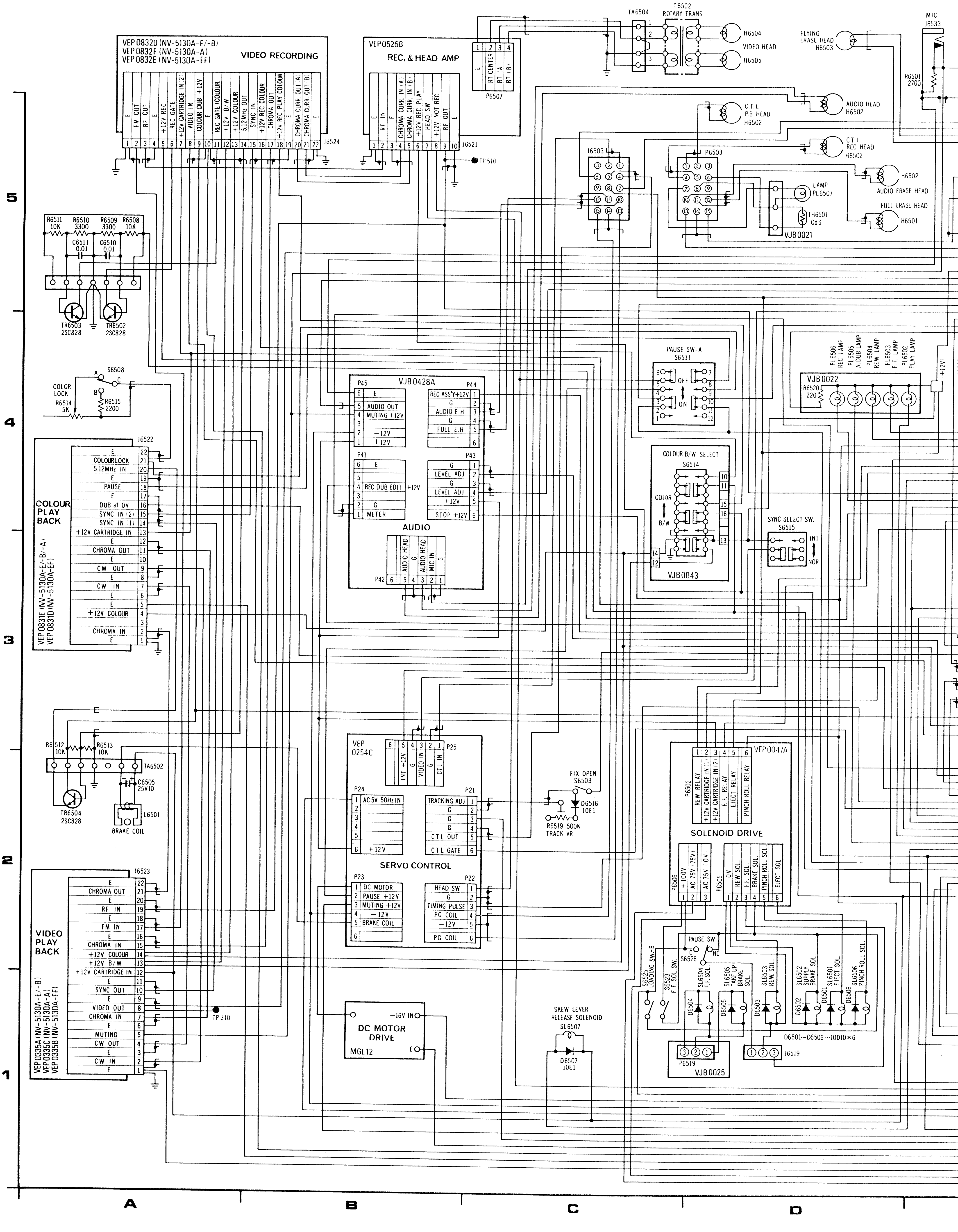
LINE FILTER CITCUIT BOARD (VEP0049A)


C6507 450V0.047
C6508 450V0.047
B0049
R6518 100 (½W)
VTQ2
1
2
3
4

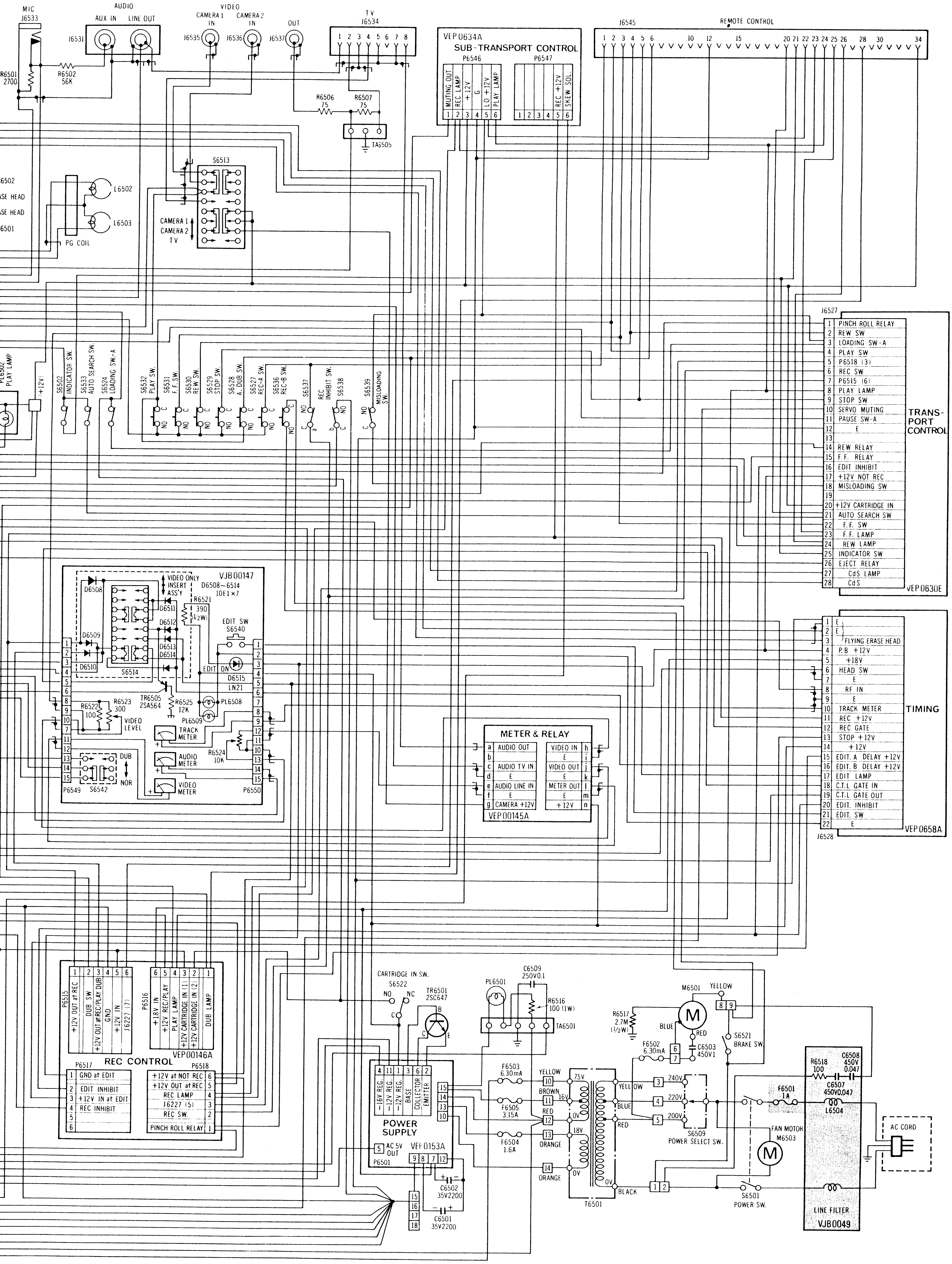
MODE SELECTOR SW CIRCUIT BOARD (VJB00147)


TO EDITING SW
TO LAMP⊖
P49 ④
TO D6515
P49 ⑮
P49 ⑭
P49 ⑬
⑥ P49
⑤ P49
⑤ P49
R6521 390 ½W
+12V IN
TO LAMP⊕
S6541
S6542
D6511
D6509
D6508
P50 Ⓑ
D6510
D6512
D6514
D6513
① P49
③ P49
② P49
3 1
4 2
1
VIDEO ONLY
INSERT
VIDEO & AUDIO
ASSEMBLY
NORMAL
DUB

INTERNAL CONNECTION DIAGRAM Electronic Ser


VEP 0832D (NV-5130A-E/-B)
VEP 0832F (NV-5130A-A)
VEP 0832E (NV-5130A-EF)
VIDEO RECORDING
J6524
VEP0525B
REC. & HEAD AMP
J6521
TP 510
P6507
RT CENTER
RT (A)
RT (B)
TA6504
T6502 ROTARY TRANS
H6504 VIDEO HEAD H6505
FLYING ERASE HEAD H6503
MIC J6533
R6501 2700
C.T.L P.B HEAD H6502
AUDIO HEAD H6502
C.T.L REC HEAD H6502
J6503
P6503
LAMP PL6507
TH6501 CdS
VJB0021
AUDIO ERASE HEAD H6502
FULL ERASE HEAD H6501
R6511 10K
R6510 3300
R6509 3300
R6508 10K
C6511 0.01
C6510 0.01
TR6503 2SC828
TR6502 2SC828
COLOR LOCK
S6508
R6514 5K
R6515 2200
J6522
COLOUR PLAY BACK
VEP 0831E (NV-5130A-E/-B/-A)
VEP 0831D (NV-5130A-EF)
COLOUR LOCK
5.12MHz IN
PAUSE
DUB at 0V
SYNC IN (2)
SYNC IN (1)
+12V CARTRIDGE IN
CHROMA OUT
CW OUT
CW IN
+12V COLOUR
CHROMA IN
VJB 0428A
P45
P44
AUDIO OUT
MUTING +12V
−12V
+12V
REC ASS'Y +12V
AUDIO E.H
FULL E.H
P41
P43
REC DUB EDIT
METER
LEVEL ADJ
STOP +12V
AUDIO
P42
AUDIO HEAD
MIC IN
PAUSE SW-A S6511
OFF
ON
COLOUR B/W SELECT S6514
COLOR
B/W
VJB0043
SYNC SELECT SW. S6515
INT
NOR
PL6506 REC LAMP
PL6505 A.DUB LAMP
PL6504 REW LAMP
PL6503 F.F. LAMP
PL6502 PLAY LAMP
+12V
VJB0022
R6520 220
R6512 10K
R6513 10K
TA6502
C6505 25V10
TR6504 2SC828
L6501 BRAKE COIL
VEP 0254C
P25
INT +12V
VIDEO IN
CTL IN
P24
AC 5V 50Hz IN
+12V
P21
TRACKING ADJ
CTL OUT
CTL GATE
SERVO CONTROL
P23
DC MOTOR
PAUSE +12V
MUTING +12V
−12V
BRAKE COIL
P22
HEAD SW
TIMING PULSE
PG COIL
FIX OPEN S6503
D6516 10E1
R6519 500K TRACK VR
VEP0047A
P6502
REW RELAY
+12V CARTRIDGE IN (1)
+12V CARTRIDGE IN (2)
F.F. RELAY
EJECT RELAY
PINCH ROLL RELAY
SOLENOID DRIVE
P6506
+100V
AC 75V (75V)
AC 75V (0V)
P6505
0V
REW SOL.
F.F. SOL.
BRAKE SOL.
PINCH ROLL SOL.
EJECT SOL.
J6523
VIDEO PLAY BACK
VEP 0335A (NV-5130A-E/-B)
VEP 0335C (NV-5130A-A)
VEP 0335B (NV-5130A-EF)
RF IN
FM IN
+12V B/W
SYNC OUT
VIDEO OUT
MUTING
TP 310
DC MOTOR DRIVE
MGL12
−16V IN
SKEW LEVER RELEASE SOLENOID SL6507
D6507 10E1
PAUSE SW S6526
S6525 LOADING SW.-B
S6523 F.F. SOL. SW.
SL6504 F.F. SOL.
SL6505 TAKE UP BRAKE SOL.
SL6503 REW. SOL.
SL6502 SUPPLY BRAKE SOL.
SL6501 EJECT SOL.
SL6506 PINCH ROLL SOL.
D6504
D6505
D6503
D6502
D6501
D6506
D6501~D6506···10D10×6
P6519
VJB0025
J6519
FM OUT
RF OUT
+12V REC
REC GATE
+12V CARTRIDGE IN (2)
COLOUR DUB +12V
REC GATE (COLOUR)
+12V B/W
+12V COLOUR
5.12MHz OUT
SYNC IN
+12V REC COLOUR
+12V REC PLAY COLOUR
CHROMA CURR. OUT (A)
CHROMA CURR. OUT (B)
CHROMA CURR. IN (A)
CHROMA CURR. IN (B)
+12V REC PLAY
HEAD SW
+12V NOT REC
1
2
3
4
5
A
B
C
D

ic Servo Editing VTR Model NV-5130A-E, -B, -A, -EF


MIC
J6533
AUDIO
AUX IN
LINE OUT
J6531
VIDEO
CAMERA 1 IN
CAMERA 2 IN
OUT
J6535
J6536
J6537
TV
J6534
R6501 2700
R6502 56K
R6506 75
R6507 75
TA6505
VEP0634A
SUB-TRANSPORT CONTROL
P6546
P6547
MUTING OUT
REC LAMP
+12V
G
LO +12V
PLAY LAMP
REC +12V
SKEW SOL.
J6545
REMOTE CONTROL
S6513
CAMERA 1
CAMERA 2
TV
L6502
L6503
PG COIL
PL6502 PLAY LAMP
(+12V)
S6502 INDICATOR SW.
S6533 AUTO SEARCH SW.
S6524 LOADING SW.-A
S6532 PLAY SW.
S6531 F.F. SW.
S6530 REW SW.
S6529 STOP SW.
S6528 A. DUB SW.
S6527 REC-A SW.
S6536 REC-B SW.
S6537
REC INHIBIT SW. S6538
S6539 MISLOADING SW.
NO
NC
C
J6527
1 PINCH ROLL RELAY
2 REW SW
3 LOADING SW-A
4 PLAY SW
5 P6518 (3)
6 REC SW
7 P6515 (6)
8 PLAY LAMP
9 STOP SW
10 SERVO MUTING
11 PAUSE SW-A
12 E
13
14 REW RELAY
15 F.F. RELAY
16 EDIT INHIBIT
17 +12V NOT REC
18 MISLOADING SW
19
20 +12V CARTRIDGE IN
21 AUTO SEARCH SW
22 F.F. SW
23 F.F. LAMP
24 REW LAMP
25 INDICATOR SW
26 EJECT RELAY
27 CdS LAMP
28 CdS
TRANS-PORT CONTROL
VEP0630E
VJB00147
D6508~6514 10E1×7
VIDEO ONLY INSERT ASS'Y
R6521 390 (1/2W)
EDIT SW S6540
EDIT ON
D6515 LN21
PL6508
PL6509
D6508
D6509
D6510
D6511
D6512
D6513
D6514
S6514
R6522 100
R6523 300
VIDEO LEVEL
TR6505 2SA564
R6525 12K
TRACK METER
AUDIO METER
VIDEO METER
R6524 10K
DUB
NOR
P6549
S6542
P6550
METER & RELAY
a AUDIO OUT
b E
c AUDIO TV IN
d E
e AUDIO LINE IN
f E
g CAMERA +12V
VIDEO IN h
E i
VIDEO OUT j
E k
METER OUT l
E m
+12V n
VEP00145A
1 E
2 E
3 FLYING ERASE HEAD
4 P.B +12V
5 +18V
6 HEAD SW
7 E
8 RF IN
9 E
10 TRACK METER
11 REC +12V
12 REC GATE
13 STOP +12V
14 +12V
15 EDIT. A DELAY +12V
16 EDIT. B DELAY +12V
17 EDIT LAMP
18 C.T.L GATE IN
19 C.T.L GATE OUT
20 EDIT. INHIBIT
21 EDIT. SW
22 E
TIMING
VEP0658A
J6528
P6515
+12V OUT at REC
DUB SW
+12V OUT at REC/PLAY DUB
GND
+12V IN
J6227 (7)
P6516
+18V IN
+12V REC/PLAY
PLAY LAMP
+12V CARTRIDGE IN (1)
+12V CARTRIDGE IN (2)
DUB LAMP
VEP00146A
REC CONTROL
P6517
1 GND at EDIT
2 EDIT INHIBIT
3 +12V IN at EDIT
4 REC INHIBIT
P6518
+12V at NOT REC 6
+12V OUT at REC 5
REC LAMP 4
J6227 (5) 3
REC SW. 2
PINCH ROLL RELAY 1
CARTRIDGE IN SW. S6522
TR6501 2SC647
B
C
E
PL6501
C6509 250V0.1
R6516 100 (1W)
TA6501
POWER SUPPLY
VEP0153A
-16V REG
-12V REG
-12V REG
BASE
COLLECTOR
EMITTER
AC 5V OUT
P6501
C6502 35V2200
C6501 35V2200
F6503 6.30mA
F6505 3.15A
F6504 1.6A
YELLOW
BROWN
RED
ORANGE
75V
16V
0V
18V
T6501
BLACK
BLUE
240V
220V
200V
S6509 POWER SELECT SW.
F6502 6.30mA
C6503 450V1
R6517 2.7M (1/2W)
M6501
M
S6521 BRAKE SW.
R6518 100
C6508 450V 0.047
C6507 450V0.047
F6501 1A
L6504
FAN MOTOR M6503
S6501 POWER SW.
AC CORD
LINE FILTER
VJB0049
E
F
G
H

IMPORTANT SAFETY NOTICE

THE SHADED AREA ON THIS SCHEMATIC DIAGRAM INCORPORATES SPECIAL FEATURES IMPORTANT FOR PROTECTION FROM X-RADIATION, FIRE AND ELECTRICAL SHOCK HAZARDS. WHEN SERVICING IT IS ESSENTIAL THAT ONLY MANUFACTURER'S SPECIFIED PARTS BE USED FOR THE CRITICAL COMPONENTS IN THE SHADED AREAS OF THE SCHEMATIC.